PROVINCE OF SASKATCHEWAN

11-12

ANNUAL REPORT

MINISTRY OF ENVIRONMENT

State of Drinking Water Quality in Saskatchewan

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Letters of Transmittal

The Honourable Vaughn Solomon Schofield
Lieutenant Governor of Saskatchewan

I respectfully submit the Annual Report on the State of Drinking Water Quality in Saskatchewan for the fiscal year ending March 31, 2012.

The Government of Saskatchewan is committed to increased transparency and accountability, keeping its promises, responsibly managing expenditures and delivering results to the Saskatchewan people.

The 2011-12 Annual Report profiles the activities and accomplishments made to improve the safety of drinking water in Saskatchewan since the waterborne disease contamination event occurred in North Battleford 10 years ago. Ongoing attention to drinking water management and source water protection is paramount in maintaining our quality of life in Saskatchewan.

The work of protecting our drinking water is constant. This report offers a transparent look at the initiatives undertaken in 2011-12, and the results achieved, as well as insight into future plans for water management and protection.

These activities are aligned with the vision and goals released with the 2012-13 Budget. Building on the Saskatchewan Advantage, we are focusing our efforts to ensure that the people of Saskatchewan continue to experience safe and sustainable drinking water for years to come.

Respectfully submitted,

Ken Cheveldayoff
Minister of Environment

Letters of Transmittal

To Minister Ken Cheveldayoff
Ministry of Environment

I respectfully submit the Annual Report on the State of Drinking Water Quality in Saskatchewan for the fiscal year ending March 31, 2012. I acknowledge responsibility for this 2011-12 report and declare the information contained within this report is accurate, complete and reliable.

The 2011-12 report describes the drinking water related activities of ministries and agencies involved in drinking water and source water protection activities in Saskatchewan. Key partners in protecting and improving Saskatchewan drinking water supplies and source waters include the Ministry of Environment, Ministry of Health, Regional Health Authorities, Saskatchewan Watershed Authority, SaskWater, the Ministry of Municipal Affairs and the Ministry of Agriculture.

On behalf of the key partners, the Ministry of Environment provides information on our collective accomplishments in the protection, conservation and sustainable development of drinking water and related source water resources during 2011-12.

The province is committed to ensuring that all stakeholders are engaged and supported as partners in the management of drinking water supplies and the groundwater and watersheds that supply them. The province will continue to prevent and reduce risks to the health of people and the environment and to ensure safe and sustainable drinking water and wastewater management.

Safe and clean water supplies are a key resource in the semi-arid prairies, essential to support a high quality of life in our province, ongoing economic development and sustaining the "Saskatchewan Advantage". Together, ministries and agencies continue to build a secure and prosperous Saskatchewan by working to improve the management of drinking water and related wastewater and source water systems in the province.

Respectfully submitted,

Elizabeth Quarshie
Deputy Minister

Introduction

This annual report presents the activities and results of various agencies in managing drinking water in Saskatchewan for the fiscal year ending March 31, 2012. It reports to the public and elected officials on public commitments made and other key accomplishments of ministries and agencies engaged in drinking water management in Saskatchewan.

Although a renewed vision and set of goals were introduced as a result of the 2011 provincial election, the 2011-12 Annual Report on the State of Drinking Water Quality in Saskatchewan will be presented in relation to the vision and goals that guided the development of the 2011-12 Plan.

Results are provided on publicly committed strategies, actions and performance measures identified in the 2011-12 Plan.

The report also demonstrates progress made on Government commitments as stated in the Government Direction for 2011-12: The Saskatchewan Advantage, the Minister's Mandate letter, throne speeches and other commitments and activities of the ministries and agencies engaged in drinking water management and related activities.

The annual report demonstrates the commitment to effective public performance reporting, transparency and accountability to the public.

This is the tenth Annual Report on the Status of Drinking Water in Saskatchewan. This report is intended to inform residents and elected officials of Saskatchewan of the status of drinking water quality, waterworks infrastructure, source water protection and water-related items and measures in the province over the April 1, 2011 to March 31, 2012 period. The report is a legislated requirement under The Environmental Management and Protection Act, 2002.

The 2011-12 Annual Report follows a similar format to the 2010-11 Annual Report. The 2011-12 Annual Report on the Status of Drinking Water also sets the stage for the 2012-13 planning and budget process by providing an opportunity to assess the accomplishments, results and lessons learned and how to build on past successes for the benefit of Saskatchewan people.

Safe drinking water is a vital component in the protection of public health and disease prevention and therefore essential for the health and well-being of Saskatchewan's citizens. High quality water is important for maintaining natural ecosystems and the species that depend upon them, ensuring the productivity of industry, sustaining commerce and for sustaining growth in the province. The quality of drinking water, the condition of systems that produce it and the protection of source waters remains an important public health and environmental issue in Saskatchewan at the present time and for the future.

The report outlines the roles, responsibilities and resources of ministries and agencies involved in water management, as well as the regulatory framework and activities undertaken by the Government of Saskatchewan to manage drinking water. The report also discusses operator certification, drinking water quality monitoring, wastewater management, source protection, information management systems and public education initiatives, which are key actions and indicators of performance in improving drinking water quality in Saskatchewan. This report is completed annually in accordance with recommendation 26(d) of the Report of the Commission of Inquiry into matters relating to the safety of the public drinking water supply in the City of North Battleford, March 28, 2002. Recommendation 26(d) states that: "The Environmental Management and Protection Act be amended to: (d) provide that the unit produce an annual report to the legislature on the state of drinking water quality in the province." The Report of the Commission of Inquiry is available online at: www.northbattlefordwaterinquiry.ca/inquiry/inquiry.htm.

The report includes contributions from Saskatchewan Ministries of Environment, Health, Municipal Affairs (MA) and Agriculture (AG), as well as material provided by the Saskatchewan Watershed Authority (SWA) and SaskWater. The Saskatchewan Ministry of Environment's Municipal Branch compiled the report.

Alignment with Government Direction

The actions undertaken to protect and sustain drinking water and source water for the future align with government's vision and three goals:

Our Government's Vision

A secure and prosperous Saskatchewan, leading the country in economic and population growth, while providing a high quality of life for all.

Government's Goals

- Sustain Economic Growth for the benefit of Saskatchewan people, ensuring the economy is ready for growth and positioning Saskatchewan to meet the challenges of economic and population growth and development.
- Secure Saskatchewan as a safe place to live and raise a family where people are confident in their future, ensuring the people of Saskatchewan benefit from the growing economy.
- Keep Government's Promises and fulfill the commitments of the election, operating with integrity and transparency, accountable to the people of Saskatchewan.

Together, all ministries and agencies support the achievement of government's three goals, and work towards a secure and prosperous Saskatchewan.

An Overview of Drinking Water Management in Saskatchewan

Since the waterborne disease outbreaks of May 2000, in Walkerton, Ontario and spring 2001, in North Battleford, Saskatchewan, the Government of Saskatchewan has heightened and focused efforts to improve drinking water supplies and protect source waters in the province. The intent of these efforts is to provide safe drinking water. These actions are also intended to reassure the citizens of the province that government is helping to ensure our drinking water is safe.

Several ministries and agencies are involved in the governance and protection and/or provision of drinking water supplies and source waters in Saskatchewan including the Ministries of Environment, Health, Municipal Affairs, and Agriculture, Regional Health Authorities (RHA), Saskatchewan Watershed Authority, and SaskWater. The following is a summary of the major roles, priorities and actions of each of the government ministries and agencies involved in drinking water management and source water protection.

Saskatchewan Ministry of Environment

- leads ongoing planning, implementation and reporting associated with drinking water governance and management to which all participating ministries and agencies contribute;
- implements, inspects and regulates compliance for 572 licensed municipal waterworks, 68 permitted pipelines, 39 regional or provincial park waterworks, 24 industrial waterworks, 86 other permitted waterworks (such as trailer courts, institutions and Hutterite colonies), and 587 wastewater facilities under The Water Regulations, 2002;
- issues permits for construction and operation of water and wastewater works;

- develops policies, protocols, water quality standards and guidelines to support protection of drinking water and implementation of The Water Regulations, 2002;
- liaises with the Operator Certification Board (OCB);
- manages the Ministry of Environment's (the ministry) drinking water information system, Environmental Management System (EMS) that houses water quality and inspection data for all ministry regulated waterworks and wastewater works in the province;
- monitors surface water quality at primary surface water quality stations across the province; and
- manages the www.SaskH2O.ca website that supplies a broad range of drinking water related information gathered from water management authorities within the province.

Saskatchewan Ministry of Municipal Affairs

- provided financial assistance for water infrastructure under the Canada-Saskatchewan Municipal Rural Infrastructure Fund (MRIF), the Canada-Saskatchewan Building Canada Fund-Communities Component (BCF-CC), the Canada-Saskatchewan Provincial/Territorial Base Fund (PT Base), the Canada-Saskatchewan Infrastructure Stimulus Fund (ISF), the Saskatchewan Infrastructure Growth Initiative (SIGI) and the Northern Water and Sewer Program for 2011-12;
- legislates and regulates pricing policies and capital investment strategies for municipal waterworks; and
- legislates and regulates municipal protection of water sources through planning bylaws.

Saskatchewan Watershed Authority

- monitors source (surface/ground) water;
- provides flood forecasting and identifies flood susceptible areas;
- leads watershed and aquifer planning;
- owns, operates and maintains water management infrastructure;
- provides waterworks source water approval (except municipal);
- allocates groundwater and surface water for use; and
- develops and provides State of Watershed Reporting.

Saskatchewan Ministry of Health/Health Regions

- inspects for compliance at semi-public waterworks and certain other waterworks as required by The Health Hazard Regulations;
- manages data systems for Public Health Inspectors and laboratory information;
- analyses water through the Saskatchewan Disease Control Laboratory; and
- provides advice and addresses waterborne illnesses.

Saskatchewan Ministry of Agriculture

- has responsibility under The Agricultural Operations Act for intensive livestock provisions;
- administers The Irrigation Act, 1996 and provides water related advice;
- provides pesticide (applicator) licenses under The Pest Control Products (Saskatchewan) Act;
- conducts research, demonstrations and technology transfer;
- provides advice on farm water supplies; and
- coordinates Environmental Farm Planning (Federal/Provincial Growing Forward Agreement).

SaskWater

- a commercial Crown water utility that provides the following water services in Saskatchewan for municipalities, industries and First Nation communities:
  - potable and non-potable water supply;
  - wastewater treatment and management;
  - certified operations and maintenance for customer-owned systems;
  - project management services;
  - water leak detection services;
  - operator training; and
  - remote monitoring services.

The Ministries of Environment and Health, and the individual RHA's continue to deliver water and wastewater programming and governance through a system of centralized planning, protocol and standards development and regionalized inspection and compliance services. During 2011-12, the Ministry of Environment's staff complement totaled 33.9 full time equivalents (FTE) for delivery of all aspects of the ministry's drinking water and wastewater management activities. The ministry employs an additional three FTEs to manage the EMS and the SaskH20.

The Ministry of Health's Saskatchewan Disease Control Laboratory has 17.5 FTEs that are dedicated to water testing and the accreditation program in support of the Safe Drinking Water Strategy. Health Region Public Health Inspectors, Medical Health Officers and Public Health Nurses also play a role in water related activities (i.e. semi-public water supply inspection, issuance of Emergency Boil Water Orders (EBWO) and water borne disease investigations).

The Ministry of Agriculture has nine FTEs that deliver intensive livestock inspection and regulatory approval services to ensure protection of water resources from intensive livestock operations. One additional full time position provides technical assistance to address environmental issues related to livestock development and abattoir waste management. Ministry of Agriculture staff continues to participate in the Aquifer/Watershed planning activities and technical committees. It also develops and distributes management and technology information for conservation and grazing and crop production that reduce and/or minimize impacts to water resources. Three FTEs deliver pesticide regulatory services.

The Pest Control Products (Saskatchewan) Act and regulations require any individual who uses or applies a pesticide, as part of their duties or, for commercial gain to hold a valid pesticide applicator license. An applicant for a pesticide applicator license must pass a pesticide applicator course. This training is valid for five years; however, the applicator license is renewed on an annual basis.

Pesticide education and applicator training and certification are recognized as a key tool in risk reduction. Education helps mitigate the risks associated with pesticide application and results in the more responsible use of pesticides. The responsible use of pesticides helps preserve the natural environment while keeping it safe for the use and enjoyment of the general public.

In Saskatchewan, the Saskatchewan Institute of Applied Science and Technology (SIAST) offers pesticide applicator courses. There are currently 2,056 licensed pesticide applicators in the province.

The Ministry of Agriculture administers The Irrigation Act, 1996. The legislation ensures soils and water are suitable for sustainable irrigation. Irrigation soils, water quality and water tables are monitored for sustainability.

The Ministry of Municipal Affairs' water-related programming is mainly provided through centralized policy development and program delivery services.

Key partners outside the provincial government include the federal government through the Building Canada Fund, Federal Gas Tax program, Canada-Saskatchewan Municipal Rural Infrastructure Fund, participants in the Growing Forward Agreement, municipalities and other waterworks owners, the Saskatchewan Urban Municipalities Association (SUMA), the Saskatchewan Association of Rural Municipalities (SARM), the Saskatchewan Water and Wastewater Association (SWWA) and the Operator Certification Board (OCB).

SWWA and the OCB have been instrumental in advancing waterworks operator certification in the province. The OCB is appointed by government, but operates at arm's length in considering the qualification and standing of water and wastewater works operators in the province. Key stakeholders are consulted on a periodic basis to aid in the ongoing development and delivery of drinking water and wastewater related programming and activities of the Government of Saskatchewan.

The following sections of the report provide information on the status of drinking water in Saskatchewan during 2011-12. Further information on drinking water quality is available on the SaskH2O website www.SaskH20.ca, and on the Ministry of Environment's website www.environment.gov.sk.ca. Additional detailed background information regarding drinking water quality in Saskatchewan is available at www.SaskH2O.ca/news.asp, and www.SaskH2O.ca/MyDrinkingWater.asp. The following sections also report on the significant actions and the performance levels in achieving key indicators for the improvement in drinking water and related protection and enhancement measures.

Transparency regarding the status of drinking water is intended to improve trust in drinking water supplies and the waterworks systems that produce it. Public reporting is intended to further the accountability of the ministries and agencies that manage and govern drinking water in the province.

Progress in 2011-12

This section presents the key results, activities, accomplishments and outcomes in 2011-12, relating to the protection and status of drinking water in Saskatchewan. The results in this section support the achievement of government's goals as identified in the "Alignment with Government Direction" section and the more specific areas related to drinking water that follow.

Ministries and agencies engaged in drinking water management in Saskatchewan use performance information to assess overall progress towards improving the safety and management of drinking water in the province. In turn, reviews and assessments each year allow and direct the most effective adjustment of future plans and actions to address priority elements. Management affirms that all major external factors that could have an impact on performance results have been identified and explained. Additionally, significant efforts have been made to ensure performance data is valid through ongoing review and validation of data. In general, performance in addressing drinking water quality and source water protection management in Saskatchewan has paralleled or exceeded performance of other Canadian provinces where similar strategic initiatives are in place.

The results for key actions provided below are organized by common activities focusing on various components of drinking water and source water protection and a report on actual progress. The following is a summary of the most significant achievements related to drinking water and source water status and protection in Saskatchewan during 2011-12. Further information is available by contacting the Ministry of Environment or viewing on the internet at www.SaskH2O.ca.

Waterworks systems and operations provide safe, clean and sustainable drinking water

Waterworks staff are capable and well-trained

Provision of safe drinking water is highly reliant on the knowledge and capabilities of waterworks operators and the manner in which they apply their skills to produce and monitor the quality of drinking water. Along with source water protection, sound and capable infrastructure, water quality monitoring, and knowledgeable operators are some of the elements of a "multi-barrier approach" to ensure safe drinking water. The following is a summary of activities conducted during 2011-12, and the related achievements in working to ensure that waterworks staff is capable and well-trained.

Results

- As of March 31, 2012, a total of 2,104 waterworks or sewage works operators had been certified by the Saskatchewan Operator Certification Board since that organization began to formally certify operators in 2002. Of the 2,104 total certified operators to date, 1201 operators retained full active certification as of March 31, 2012.

- The Ministry of Environment participated as a member of the Canadian Water and Wastewater Operators Certification Committee in conjunction with the Associated Boards of Certification (ABC) towards developing the Canadian Best Practices for operator certification. This committee is setting the groundwork for reciprocity across Canada within the Agreement on Internal Trade for all certified water and wastewater operators. Several drafts of the Canadian Water and Wastewater Operator Certification Best Practices were developed and reviewed with the final draft expected by April 17, 2012.

- During 2011-12, approximately 94 per cent of operators receiving renewal notification from the OCB actually renewed their certification. This is an increase from 2010-11, when 82 per cent of operators renewed their certification on notification by the OCB. This increase in renewal, compared to the 2010-11 fiscal year, is due in part by efforts of the OCB to inform operators well in advance of their renewal date and posting the dates of their review sittings a year in advance. There is still an issue with late applications for renewal by operators and a higher rate of retirements by operators.

- Operator certification and continuing education requirements were always reviewed and discussed during each waterworks and sewage works inspection to help ensure operators remain current with certification requirements.

- The Ministry of Environment continued to liaise with SIAST on the content and requirements for operator training in Saskatchewan as a way to ensure educational opportunities meet the needs of waterworks operators in the province.

- The Ministry of Environment directly supported training opportunities including aiding the Saskatchewan Association of Northern Communities, Northern Water Conference in April 2011. The Ministry also supported the Saskatchewan Water and Wastewater Association (SWWA) for their midterm membership meeting in June 2011 and annual convention in November 2011 by providing organizational aid and instruction to operators during training sessions. Ministry staff also provided instruction to SWWA during dedicated operator training workshops hosted at locations across the province throughout the year. The Ministry presented instruction and workshops at the annual Saskatchewan Association of Rural Water Pipelines (SARWP) conference in December 2011.

- SaskWater works on behalf of Aboriginal Affairs and Northern Development Canada (AANDC formerly known as INAC) to provide Saskatchewan First Nations with operator training. In 2011, the company trained approximately 80 water and wastewater operators at 41 First Nations communities. The training program aims to facilitate the delivery of safe water to residents and to protect communities' investment in water and wastewater infrastructure. This program began in 1978 and has evolved and expanded to suit the specific water needs of First Nations communities.

- The OCB continued to certify water and wastewater works operators throughout 2011-12. As of March 31, 2012, there were approximately 603 waterworks licensed by Ministry of Environment with at least one certified operator, regional operator or contract operator (see Table 1). Some operators continue to take exams and are in the process of obtaining certification, or upgrading their certification levels and categories. Some smaller municipal waterworks do not require a certified operator rather a trained operator is required by regulation. Some facilities sought hygienic classification, which does not require a certified operator.

- The Ministry of Environment continues to work with municipalities, waterworks owners and others to maintain and to advance the implementation of operator certification and continuing education in the province. As of March 31, 2012 only two communities, Rockglen, and Antler, did not employ a certified operator or regional operator to oversee the operation of their waterworks.

Table 1 provides additional trend information on the number of waterworks with certified operators since 2000-01, for all waterworks regulated by Ministry of Environment.

Table 1: Summary of certification trends for waterworks since 2000-01

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Certified operators*	44	293	403	533	682	1107	1170	1223	1231	1229	1216	1201
All Waterworks with certified operators**	24	116	217	219	326	532	614	638	675	659	660	603
Number of licensed waterworks ***	609	609	617	630	641	714	728	724	765	772	778	789
Number of Hygienic Works not Requiring Certified operators	N/A	N/A	N/R	N/R	N/R	92	101	107	114	113	118	117

* Operators working in Ministry of Environment regulated waterworks.
** Includes all waterworks with certified operators in the province.
***Licensed works includes municipal water treatment works, municipal water distribution systems, pipelines and large privately or government owned waterworks regulated by the Ministry of Environment. These values include hygienic waterworks that do not require a certified operator
N/A: Not Applicable.
N/R: Not Recorded.

Source: Operator Certification Board database and Ministry of Environment hygienic waterworks listing

Table 2 provides information on the number of operators certified at various levels in all categories of the water and wastewater treatment industry in Saskatchewan during 2011-12.

Table 2: Distribution of certified operators at water and wastewater works - fiscal year 2011-12*

System Classification[1]	Water Treatment	Water Distribution	Wastewater Treatment	Wastewater Collection
Small System[2]	143	143	87	87
Class-1	403	499	500	464
Class-2	332	324	112	158
Class-3	63	27	24	10
Class-4	42	16	29	10
Total	983	1009	752	729

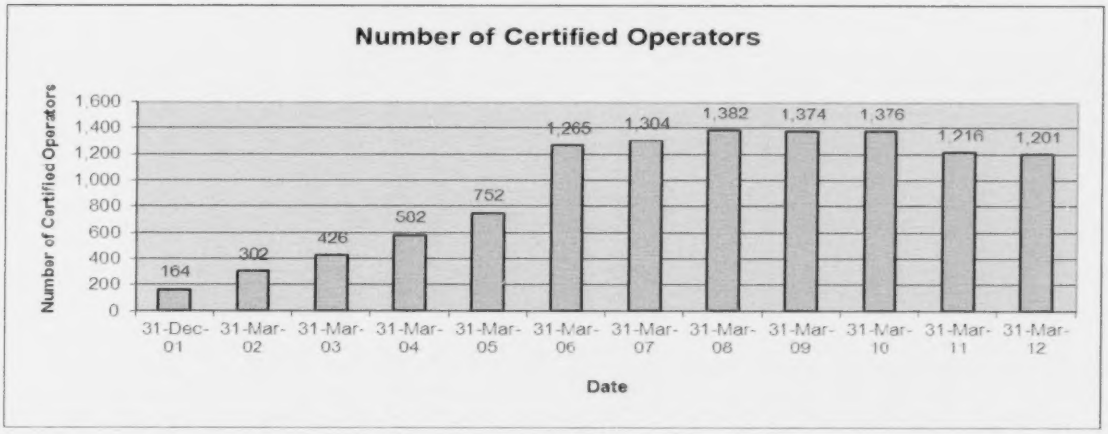
[1] Waterworks system classification is defined by the complexity and size of the waterworks in accordance with standard parameters adopted from the Associated Boards of Certification (ABC). More information on waterworks system classification is available from the Operator Certification Standards EPB139 (see http://www.SaskH2O.ca/DWBinder/EPB139OperatorCertificationStandards2002.pdf).
[2] There are several types of Small Systems. A Small Water System is defined as a Class-1 groundwater treatment and/or Class-1 distribution system, serving fewer than 500 people. Small treated drinking water pipelines serving fewer than 500 people can be classified as Small Systems and some of their operators have

become certified as Small System operators and are shown only under Water Distribution. A Small Wastewater System is a Class-1 wastewater treatment system (generally a lagoon system) and/or a Class-1 collection system serving fewer than 500 people.
*Note: Table 2 does not include operators that are overdue in certificate renewal as of March 31, 2012.

Source: Operator Certification Board Database

Figure 1 provides a historical summary of the number of operators certified to date. As of March 31, 2012, the number of all active certified operators reported by the OCB is 1,201. These are all the certified operators, including those who do not operate waterworks regulated by Ministry of Environment. Indian and Northern Affairs Canada (INAC) required First Nation operators to become certified by the same criteria of education, experience and examination as operators mandated by Ministry of Environment. Since INAC did not have a certification program of its own, Ministry of Environment invited the First Nations operators to participate in its certification program and 115 were certified at the end of this fiscal year. In addition, there are ten operators working in federal facilities such as parks or correctional centers. In addition to the 1,201 operators, 124 are overdue for their certification renewal and are not on the list.

Figure1: Certified Operator Statistics, December 2001 to March 31, 2012



Source: Operator Certification Board certification records database

The number of certified operators applying for initial certification during the 2011-12 fiscal year was 188, and there were 175 operators who applied to upgrade their certification by either increasing their level of certification or adding new categories of certification. A summary of communities with Certified Operators and Operator Classification, updated after each OCB meeting, is available on the internet (http://www.SaskH2O.ca/foroperators.asp).

Measurement Results

Per cent of communities with human consumptive waterworks whose operators have received some level of certification

Table 3: Per cent of communities with human consumptive waterworks whose operators have received some level of certification

	Sept. 30, 2004	*March 31, 2006*	*March 31, 2007*	*March 31, 2008*	*March 31, 2009*	*March 31, 2010*	*March 31, 2011*	*March 31, 2012*	*Annual Change (2011-12)*
Per cent of communities with human consumptive waterworks whose operators have received some level of certification	54.3	96.8	98.9	99.2	99.2	98.9	98.3	99.6	↑1.3

Source: Ministry of Environment – Environmental Management System

As of March 31, 2012, 99.6 per cent of communities with human consumptive waterworks have operators that have achieved some level of certification (Table 3). This represents 1.3 percent increase in compliance from the previous year when the 98.3 per cent of community waterworks had an operator certified to some level. Approximately 99.93 per cent of the population served by a community (municipal) human consumptive waterworks have an operator that has received full certification or some level of training (completed any approved training courses). Knowledgeable, certified operators help to ensure safe drinking water.

Compliance with operator certification is primarily controlled by the owner of the waterworks, but also requires cooperation from the waterworks operator(s). Acceptance and uptake of operator certification is key to ensuring the delivery of safe drinking water. As a point of comparison, Alberta's (population 3.2 million) mandatory certification program took effect on January 1, 1983 and its program currently has approximately 2,300 certified operators. Currently, there is no cost for their certification examinations, applications and renewals. Saskatchewan (population approximately 1.0 million) has 1,201 certified operators. Examinations cost about $80, and certification, and renewal fees (every two years) are $150. Saskatchewan's certification program has progressed very much since its inception in 2000.

Infrastructure produces water that meets the national guidelines

Infrastructure design, capability, condition and maintenance are critical in the production of safe drinking water. Standards, incentives, requirements, compliance measures and implementation plans are also important to ensure that waterworks are operated and monitored to achieve drinking water of a quality that protects human health. The "Guidelines for Canadian Drinking Water Quality" (see www.hc-sc.gc.ca/ewh-semt/alt_formats/hecs-sesc/pdf/pubs/water-eau/2010-sum_guide-res_recom/sum_guide-res_recom-eng.pdf), are used in Canada as the definitive measure of science-based safety criteria for drinking water. Saskatchewan has adopted the guidelines as standards (see www.SaskH2O.ca/DWBinder/EPB207Drinking_Water_Standards_post.pdf). The following is a summary of activities, which were conducted during 2011-12, and the related achievements in working to ensure that infrastructure produces water that meets national drinking water quality guidelines.

Results

- SaskWater delivered 6 billion litres of safe, high quality drinking water to its customers.
- The Ministry of Environment (the ministry) provided technical advice to numerous communities that aided in resolving upset situations such as failures of disinfection systems and system depressurizations as well as operational and water quality concerns, resulting in safer drinking water during 2011-12. Noteworthy incidents in 2011-12 included water contamination events

associated with equipment failures, waterworks upsets or changing source water quality at the cities of Prince Albert, Weyburn and Meadow Lake over the February-March 2012 time period. Service to waterworks owners and operators of this type is an ongoing activity of the ministry and will continue in 2012-13 and beyond.

- During 2011-12, the Ministry of Environment developed and consulted on a water main chapter to support the implementation of the Results-Based Regulation framework and proclamation of The Environmental Management and Protection Act, 2010. The intent of this chapter of the Saskatchewan Environmental Code is to ensure sound and effective water main infrastructure for water distribution systems serving greater than 5,000 people while eliminating permits to construct in favor of project registration and enhance the opportunities for introduction of innovative technology provided the health and environmental protection objectives are achieved.

- The Ministry of Environment continued to track, report and follow-up with waterworks owners on compliance with sample submission and water quality standards and provided quick notification on bacteriological water quality monitoring results and related follow-up activities.

- The Ministry of Environment provided same day advice to waterworks owners, operators, engineering consultants and contractors dealing with water treatment plant and water distribution system construction and upgrades. This approach is intended to minimize costs, move projects to completion as fast as possible while achieving the ministry's human and environmental protection goals.

- The Ministry of Environment delivered review and technical advice to support sub-division evaluations for growing communities across the province. The focus of the ministry's efforts is to assure that community leaders are aware of the need for adequate water infrastructure to meet the provincial drinking water quality standards. During 2011-12, the ministry implemented the "Parallel Growth Policy" as a means to facilitate growth while drinking water infrastructure is being designed and built.

- No water and sewer projects were approved under Canada-Saskatchewan Building Canada Fund - Communities Component (BCF-CC) in 2011-12. The Infrastructure Stimulus Fund Program ended in 2011-12.

- Water and wastewater related funding was continued in 2011-12 under the Canada-Saskatchewan Municipal Rural Infrastructure Fund (MRIF); $0.5 million in federal-provincial funding was approved for an existing water project at the City of Swift Current. Under the Saskatchewan Infrastructure Growth Initiative (SIGI) Program, 18 water and sewer projects with total approved borrowing of $35.4 million were approved in 2011-12 to receive interest rate subsidies.

- In 2011-12, $2.97 million in interest-free subsidies were provided for 41 water and wastewater projects under SIGI.

- Under the federal-provincial infrastructure programs (MRIF, BCF-CC, PT Base, and ISF), $47.9 million was provided for 121 water and wastewater projects in 2011-12.

- In 2011, the Northern Municipal Trust Account (NMTA) spent $15.9 million under the Northern Water and Sewer Program for 16 water and wastewater infrastructure projects. These projects included the completion of the regional water system serving the Town of La Ronge, the Northern Village of Air Ronge and the Lac la Ronge Indian Band. For these projects, the NMTA received $0.139 million from the Department of Western Economic Diversification, $0.542 million from the Lac La Ronge Indian Band, and $0.549 million from Peter Ballantyne Cree Nation Aboriginal Affairs and Northern Development Canada.

- Under the Emergency Water and Sewer Program, the NMTA undertook work in four (4) communities. The NMTA has a contractual arrangement with SaskWater for provision of project

management services for all water and wastewater infrastructure projects at a total expense of $544,069. Services consist of general engineering, infrastructure assessment and planning, managing, design, and the construction and commissioning of works.

- In addition, the NMTA funded the Circuit Rider Program whereby all 31 communities received technical assistance to ensure their water and wastewater systems were run efficiently and adequately maintained. Total expenditures for the Circuit Rider Program were $315,000. Provision of services was contracted to ATAP Infrastructure Management Ltd.

- SaskWater continues to provide project management services for the Ministry of Municipal Affairs as part of the Northern Water and Sewer Program. Their role is in the planning and managing of the design and construction of water and wastewater infrastructure in northern Saskatchewan. SaskWater also provides ongoing technical advice to northern communities for the expansion and maintenance of water and wastewater infrastructure, including responding to community emergencies related to that infrastructure.

- SaskWater spent $31.3 million under its capital program in 2011, expanding industry clients, growing communities and renewing infrastructure for the potable and non-potable lines of business. Of that total amount, SaskWater invested $8.9 million, and the remaining amount was received from their clients and customers. Significant potable capital projects include:

    - Design and construction of a main booster station expansion in the Saskatoon service area, to accommodate growth in communities and rural users east and south of Saskatoon.
    - Design and construction of the Cupar Water Treatment Plant to replace the existing water treatment plant, which was at the end of its useful life;
    - Design and construction of the Gravelbourg water treatment plant expansion, required to meet Saskatchewan's Drinking Water Quality Standards.

- In total, SaskWater owns seven water treatment plants, three wastewater facilities, 37 water and wastewater pump stations and over 860 km of pipeline. Through this regional network, the crown corporation provided professional water and wastewater services to 59 communities, seven rural municipalities, 81 rural pipeline groups, 15 industrial and approximately 233 commercial and end-user customers.

- SaskWater continues to see potable growth where it added four individual users in 2011 and signed 10 water supply agreements for service in 2012, including four municipals, one industrial and five individual users.

- SaskWater signed a 20-year potable water supply agreement with the Town of Cupar and will begin supplying water to the community in early summer 2012.

- SaskWater provided its first full year of certified operations and maintenance service for the Lac La Ronge Regional Water Corporation, which serves the Town of La Ronge, the Village of Air Ronge and the Lac La Ronge First Nation.

- As part of its services, SaskWater remotely monitors most of its corporate owned and customer owned facilities, 24 hours a day, 365 days a year. In 2011, 41 locations were remotely monitored, allowing continuous facility surveillance of key water quality parameters, equipment operation and water levels, pressures and flows. SaskWater employed 42 provincially certified operators to monitor and maintain the quality of water from the initial source to the final point of delivery.

In terms of the status of drinking water in Saskatchewan, the bacteriological quality of water is a critical parameter because, when the related standards are exceeded, there is a possibility of rapid significant health effects for consumers. Saskatchewan uses coliform bacteria as an indicator of the quality of drinking water. The Saskatchewan Disease Control Laboratory and the Saskatchewan Research Council employed routine analysis for *E. coli* during the fiscal year to help improve the meaning and

speed of monitoring results. Saskatchewan's standards for bacteriological drinking water quality are more stringent than the "Guidelines for Canadian Drinking Water Quality".

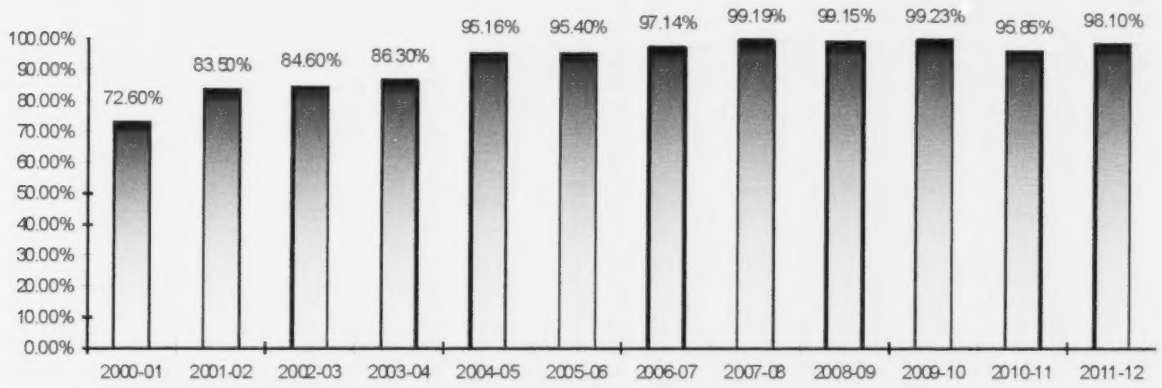
The number of samples required for bacteriological water quality monitoring of a waterworks is based on the number of people served by the system (see "Municipal Drinking Water Quality Monitoring Guidelines" at www.SaskH2O.ca/foroperators.asp), or directly to www.SaskH2O.ca/DWBinder/EPB202MunicipalDrinkingWaterQualityGuidelinesEdition3.pdf. When a routine water sample shows the presence of bacteria, follow-up activities including repeat sampling are performed. The Ministry of Environment issued three Precautionary Drinking Water Advisories (PDWAs) and eight Emergency Boil Water Orders (EBWOs) during 2011-12, when bacteriological or protozoan parasite related problems arose at waterworks.

During 2011-12, there were 20,906 valid Municipal Human Consumptive Use routine bacteriological water quality samples submitted of which 104 samples (0.50 per cent) exceeded the water quality standards of zero total coliforms, zero fecal coliforms or greater than 200 background bacteria per 100 millilitres of water. During 2011-12, more routine bacteriological water quality samples were submitted from municipal waterworks regulated by the Ministry of Environment than were required by permit requirements. A total of 20,906 routine bacteriological samples were submitted, 2,243 more than the required number, equating to a sample submission rate of 112.02 per cent. During 2010-11, there were 20,703 valid routine bacteriological water quality samples submitted of which 2,667 samples (1.29 per cent) exceeded the water quality standards. For the same period, a total of 20,703 out of 18,756 (110.38 per cent) of the required regular samples for bacteriological water quality were submitted from municipal waterworks regulated by the Ministry of Environment. The decrease in total "required" and "submitted" samples in 2011-12 reflects 116 waterworks that have been granted hygienic use status and some corrections to water treatment facility classifications.

Measurement Results

Per cent of facilities that meet bacteriological guidelines 90 per cent of the time

Figure 2: Bacteriological standards compliance



Source: Ministry of Environment - Environmental Management System

In 2011-12, there was a 2.6 per cent increase in compliance with bacteriological standards for municipal human consumptive waterworks (90 per cent of the time), when compared with the previous fiscal year. The reason for this increase is due to better compliance by smaller communities. Ministry staff continues to work to ensure municipalities and the operators of the community water supplies recognize the importance of meeting bacteriological water quality standards as a means to protect consumer health in the future.

In terms of longer trends, there has been a net increase in compliance with bacteriological water quality standards (90 per cent of the time), over the past 11 fiscal years with a 25.5 per cent increase in compliance, from 72.6 per cent in 2000-01 to 98.10 per cent in 2011-12 (Figure 2). The longer term increase in compliance with standards is the result of increased inspection and follow-up on water quality sampling results by Ministry of Environment staff, as well as increased attention to water treatment and monitoring by waterworks owners and operators.

The bacteriological quality of drinking water is important since contamination of this type can result in significant illness within a short period of time. Compliance with bacteriological water quality standards was selected as a reportable performance measure, since it provides a good indication of drinking water quality, which is important to consumers. Tracking compliance with bacteriological standards over several years indicates a positive trend. Compliance with this measure is primarily controlled by the owner of the waterworks, but also requires cooperation from the waterworks operator(s) in achieving bacteriological water quality compliance. Ongoing inspection and interaction with waterworks owners and operators is conducted to sustain good performance in achieving water that is safe from bacteriological threats.

There were 76 Municipal Human Consumptive Use waterworks in the province that exceeded the bacteriological standards at least one time during 2011-12. During the same period, there were six waterworks that had more than 10 per cent of their routine bacteriological water samples show the presence of bacteria (Duff, Gronlid, Keystown, Lanz Point, Lumsden Beach, Silton). Fenwood, Meyronne and Rama had exactly 10 per cent of their routine bacteriological water quality samples exceed the bacteriological standards. This is a significant improvement from 2010-11, when there were 171 Municipal Human Consumptive Use waterworks in the province that exceeded the bacteriological standards at least one time.

Turbidity describes water cloudiness and is an indirect measure of the number of suspended particles in water. Turbidity is a good indicator of the effectiveness of a water treatment system and is important because turbid water can harbor disease-causing organisms. If excessive turbidity is present, the effectiveness of disinfection of drinking water can be impaired. Waterworks regulated by the Ministry of Environment are required to measure turbidity at least on a daily basis as a means to track water treatment system performance.

The Ministry of Environment's turbidity standards are consistent with the "Guidelines for Canadian Drinking Water Quality, Seventh Edition". During phase-in of the turbidity standards, the ministry generally applied a turbidity standard of 1.0 Nephelometric Turbidity Units (NTU) for existing waterworks. The provincial turbidity standards presently in effect are: 0.1 NTU for membrane filtration systems; 0.3 NTU for conventional filtration systems, and 1.0 NTU for slow sand filtration and groundwater based systems. In 2011-12, the Ministry of Environment began to examine the need for increased protection in relation to turbidity exceedences, especially for systems served by surface water supplies in a manner consistent with ongoing development of the national guidelines.

During the 2011-12 fiscal year, on-site monitoring for turbidity and record keeping continued to be a requirement and these records were checked during site inspections by Environmental Project Officers (EPOs). Noteworthy turbidity related upsets occurred in Prince Albert, Weyburn and Meadow Lake and resulted in the issuance of Precautionary Drinking Water Advisories or Emergency Boil Water Orders for these communities. These upsets were addressed through system repairs, reservoir cleaning, distribution system flushing and water quality monitoring.

Ministry of Environment staff continued to ensure that waterworks owners and operators track turbidity-monitoring results and manage turbidity related water quality problems. There were 31 PDWAs issued during 2011-12, when turbidity related problems arose at waterworks. Turbidity testing results are being reported in conjunction with information submitted with regular bacteriological samples.

The range of turbidity results tested by all agencies in 2011-12, (municipal, private and government owners) is shown in Table 4.

Table 4: Range of turbidity testing results – 2011-12

Turbidity Range (NTU)	Samples	Per Cent Samples	Systems*
0 – 1	26,962	93.01 %	631
1 – 2	1.099	3.79 %	243
2 – 3	340	1.17 %	112
3 – 4	216	0.75 %	60
4 – 5	137	0.47 %	36
5+	234	0.81 %	53
Totals	28,988	100 %	N/A*

* The total number of systems is not applicable as some systems reported turbidity testing results in more than one range of turbidity values. There are a total of 789 waterworks systems regulated by the Ministry of Environment.
Source: Ministry of Environment - Environmental Management System

Disinfection is widely used in Saskatchewan and Canada as one of the key methods to prevent the spread of waterborne disease. Most disinfection of drinking water in the province is performed using chlorine-based products. Unless otherwise permitted, waterworks regulated by the Ministry of Environment are required to maintain:

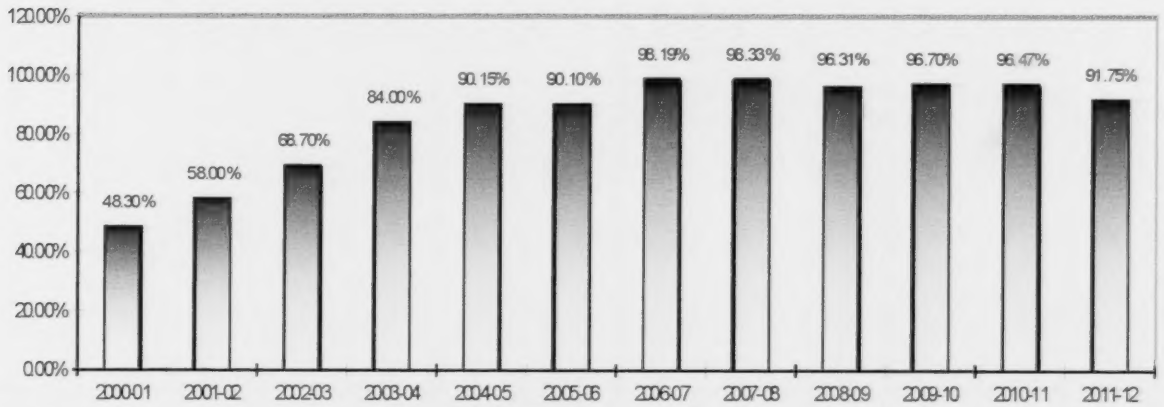
a) a free chlorine residual of not less than 0.1 milligrams per Litre (mg/L) in the water entering a distribution system; and
(b) a total chlorine residual of not less than 0.5 mg/L or a free chlorine residual of not less than 0.1 mg/L in the water throughout the distribution system; and
(c) chlorine residuals are expected to be within regulatory limits 90 per cent of the time.

Chlorine disinfectant monitoring usually includes two tests: total chlorine residual and free chlorine residual, which are done from samples collected from the water distribution system. Free chlorine residual in drinking water is important in providing lasting protection in water distribution systems. Total chlorine residual is helpful for waterworks operators to understand the effectiveness of disinfection and to judge cleanliness of the water distribution system. On-site monitoring for chlorine residual and associated record keeping is required and these records are checked during site inspections by Ministry of Environment's Environmental Project Officers (EPOs). During 2011-12, the ministry issued 13 Precautionary Drinking Water Advisories as a result of chlorination related concerns or problems at waterworks.

Measurement Results

Per cent of waterworks [regulated by Ministry of Environment] that meet disinfection requirements 90 per cent of the time

Figure 3: Disinfection standard compliance



Source: Ministry of Environment – Environmental Management System

There has been a decrease in compliance with the disinfection standards over the past fiscal year to 91.75 per cent in 2011-12 compared to 96.47 per cent in 2010-11 (Figure 3). The decrease from the 2010-11 results is considered significant and is generally attributed to a failure of smaller communities to achieve and maintain consistent disinfectant levels. The compliance rate remains significantly above the 2000-01 compliance rates of 48.30 per cent of facilities meeting disinfection requirements. Communities that failed to consistently achieve disinfection compliance included Antler, Aylesbury, Bladworth, Buchanan, Bulyea, Central Butte, Craven, Dilke, Dinsmore, Endeavour, Evesham, Francis, Garrick, Herbert, Hodgeville, Jedburgh, Loon Lake, Macoun, Major, Markinch, Maryfield, Medstead, Pangman, Pelly, Rosthern, Semans, Simpson, Stoney Beach, Strongfield, Vawn, Vonda, Wiseton, and Wollaston Lake. In instances where low disinfectant levels were detected and reported, Ministry of Environment staff followed up with the waterworks owners/operators to resolve the problems.

Proper disinfection of drinking water is one of the most important ways to ensure safe drinking water and prevent the outbreak of waterborne diseases. Compliance with chlorine residual requirements was selected as a measure since it provides a good indication of drinking water protection, which is important to consumers. Tracking compliance with chlorine residual standards over several years indicates a positive trend, which has leveled off to some degree from 2006-07 to 2011-12. Compliance with this measure is primarily controlled by the owner of the waterworks, but also requires cooperation from the waterworks operator(s) in achieving disinfection standards compliance. The ongoing inspection and interaction with waterworks owners and operators is necessary to ensure that water is safe from bacteriological threats and meets disinfection standards.

The Ministry of Environment uses the "Guidelines for Canadian Drinking Water Quality" as the basis for the water quality standards found in The Water Regulations, 2002. These standards are included in each new or renewed waterworks permit. Permitting for municipal waterworks continued though the 2011-12 fiscal year. A total of 164 waterworks operational permits were issued or renewed. The drinking water quality standards for "chemical-health" were mandatory as of December 2010, for existing waterworks and take effect upon the start-up of any new waterworks. Another 133 wastewater works permits were also issued, renewed or amended during the reporting period.

Drinking water health and toxicity parameters include a range of naturally occurring substances (arsenic, barium, boron, lead, nitrate, selenium, uranium, etc.), and other substances such as trihalomethanes, which may be produced during chlorine-based disinfection processes. These substances represent a small potential for adverse health effects over longer time periods. While the safety gains associated with eliminating microbial threats far outweighs any possible adverse health risks associated with disinfection by-products, it is important to monitor to ensure they remain within safe levels. A complete list of the health and toxicity substances monitored at Ministry of Environment regulated waterworks is available at www.SaskH2O.ca/foroperators.asp (see "Municipal Drinking Water Quality Monitoring Guidelines", or go directly to www.SaskH2O.ca/DWBinder/EPB202MunicipalDrinkingWaterQualityGuidelinesEdition3.pdf).

Water quality standards are achieved through permitting, inspection and follow-up on monitoring results. For existing waterworks, a regulatory phase-in period requires that all works meet health and toxicity standards by December 2008, (population of 5,000 or more) or by December 2010, (population of less than 5,000). Table 5 depicts compliance with sample submission requirements and testing compliance for health and toxicity parameters during the 2011-12, 2010-11, and 2009-10 fiscal years based on routine samples submitted by Ministry of Environment permitted waterworks.

Table 5: Health and toxicity sample submission and parameter result compliance 2011-12, 2010-11 and 2009-10*

Fiscal Year	Health and Toxicity Sample Submission Compliance Rate (Percentage)	Parameter Standards Compliance Rate (Percentage)
2011-12	75	80
2010-11	89	84
2009-10	86	88

*Health and Toxicity parameters include: Aluminum, Arsenic, Barium, Boron, Cadmium, Chromium, Copper, Iron, Lead, Manganese, Selenium, Uranium and Zinc

Source: Ministry of Environment – Environmental Management System

The decrease in sample submissions in 2011-12 is the result of decreased monitoring by some smaller existing waterworks to determine compliance with the health and toxicity standards that took effect in December 2010. The decrease in samples is related to communities that had previously verified compliance with drinking water quality standards that took effect in December 2010, and the variable timing of sample submission used by some communities. The Ministry of Environment has and will continue to follow up on a quarterly basis with waterworks owners who haven't submitted the required samples as a means to help ensure compliance with monitoring and drinking water quality standards.

In 2011-12, there were 100 of 673 human consumptive waterworks that exceeded at least one health and toxicity related chemical standard resulting in a total of 128 exceedences. When exceedences for health and toxicity parameters, such as arsenic or uranium, were encountered and would represent a short-term health risk, waterworks owners were advised of the results and Precautionary Drinking Water Advisories were issued for the affected water supplies. The 55 arsenic exceedences occurred in 23 human consumptive systems. Additional arsenic testing was conducted by 10 human consumptive systems. The 62 uranium exceedences occurred in 26 human consumptive systems. Additional uranium testing was conducted by 8 human consumptive systems. Table 6 provides a list of the parameters and number of excursions at all Ministry of Environment regulated waterworks.

Table 6: Health and toxicity parameter specific excursion totals for Ministry of Environment regulated waterworks during 2011-12 and 2010-11.

Parameter	Number of Excursions in 2011-12	Number of Excursions in 2011-12
Arsenic	46	55
Barium	0	1
Copper	2	0
Nitrate	0	0
Lead	3	2
Selenium	4	8
Uranium	60	62

Source: Ministry of Environment – Environmental Management System

During 2011-12, six of 673 human consumptive facilities exceeded the maximum acceptable concentration for fluoride on 18 sampling occasions. Two of these facilities (Frontier and the Resort Village of Tobin Lake) have high, naturally occurring fluoride in their ground water supplies, which accounted for 11 of the 18 exceedences. The Ministry of Environment monitors results from all human consumptive systems that artificially fluoridate or have high naturally occurring fluoride.

Implementation of the trihalomethane drinking water quality standard continues with the intent to assure full compliance with the requirements that took effect as of December 2010. The standard for trihalomethane is 100 parts per billion based on an average of four seasonal samples.

A total of 190 surface water treatment and delivery facilities were required to participate in the trihalomethane monitoring program during the 2011-12 fiscal year, which should result in 783 samples being submitted each year. The actual number of regulated waterworks that submitted samples was 171 (90.00 per cent). A total of 738 samples (94.25 per cent overall submission compliance) were submitted by the facilities. During 2011-12, 142 regulated waterworks (74.74 per cent) submitted 631 samples for analysis that met the maximum acceptable concentration for trihalomethanes in drinking water. During 2011-12, 135 of 190 regulated waterworks (71.05 per cent) produced water that met the trihalomethane objective of 100 ug/L based on the annual average of seasonal sampling. This compares to 141 regulated waterworks (77.05 per cent) that produced water meeting the trihalomethane objective in 2010-11.

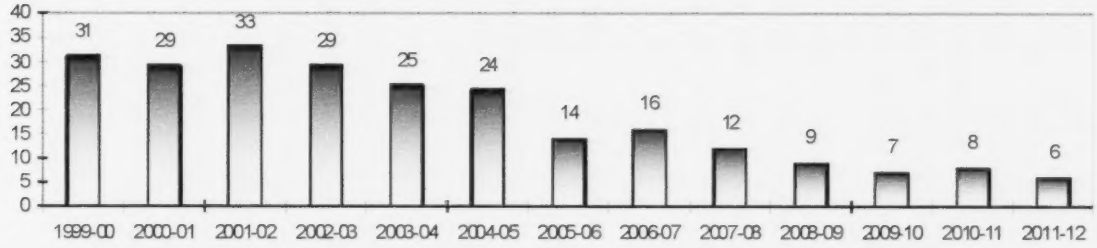
- SaskWater continues to explore the use of chlorine dioxide as an alternative method for the disinfection of water and oxidation of organic matters and minerals present in the water. Currently, this process is being reviewed for use at the Edenwold treatment plant. Due to the high levels of runoff in 2011, the community's source water significantly deteriorated, resulting in high trihalomethane readings. SaskWater began pilot testing chlorine dioxide late in 2011, and will continue in 2012, to see if it will meet the Saskatchewan Ministry of Environment's regulations related to trihalomethanes and other disinfection bi-products.

- SaskWater continues to work with engineering firms, suppliers and university researchers in developing and applying emerging technologies to ensure its customers are provided with quality drinking water. For the past four years, SaskWater has collaborated with Consulting Engineers of Saskatchewan (CES) to review technology, and exchange information and best practices.

Measurement Results

Number of waterworks that do not meet Ministry of Environment's minimum treatment requirements

Figure 4: Number of waterworks regulated by Ministry of Environment that do not meet minimum treatment requirements*



*Minimum treatment requirements include: an approved form of filtration and disinfection for waterworks reliant upon surface water or shallow groundwater sources; and disinfection alone for waterworks reliant on deep, well protected groundwater sources.

Source: Ministry of Environment Advisory Tracking Spreadsheet

As of March 31, 2012, there were six waterworks that did not meet Ministry of Environment's minimum treatment requirements, a net reduction of two waterworks, or 25 per cent from the previous year (Figure 4). The decrease resulted from ongoing work with waterworks and investments by owners to improve water treatment at their facilities. One of the waterworks converted to hygienic classification and thereafter met treatment requirements. Educational efforts and discussion on upgrading options and requirements continue; however, all infrastructure grant programs that may aid in upgrading waterworks are currently fully allocated. The Ministry of Environment's educational and compliance activities will continue during 2012-13, in efforts to reduce the number of waterworks that do not meet minimum treatment requirements. The owner of the waterworks primarily controls the achievement of this measure. However, the regulator has significant influence through a number of mechanisms such

as permit requirements for upgrading, issuance of notices of violation and related compliance actions. Periodically, as newly regulated waterworks are permitted, inadequacies in water treatment capability are discovered.

The number of waterworks that do not meet minimum treatment requirements is a direct indication of potential water quality concerns because of infrastructure inadequacies. As of March 31, 2012, human consumptive waterworks that did not meet minimum treatment requirements served approximately 581 residents or 0.06 per cent of the provincial population (2011 census provincial population of 1,033,381). Four of the waterworks that do not meet minimum treatment requirements are systems regulated with the passage of The Water Regulations, 2002. The remaining two systems, which do not meet minimum requirements, were regulated prior to the regulatory changes of 2002.

The Ministry of Environment continues to place all regulated waterworks that do not meet minimum treatment on Precautionary Drinking Water Advisories to protect consumers. The ministry also provides technical advice to communities not meeting minimum treatment requirements to assist waterworks owners to work towards system improvements. Cost of improvements is the main impediment to progress.

Waterworks systems and operations are financially sustainable

Ensuring the financial sustainability of waterworks is critical in the production of safe drinking water over the long-term. Waterworks deteriorate over time and may need to be expanded or replaced. Therefore, municipalities will need to know the condition of their waterworks and put in place pricing and capital investment policies for these systems. Public transparency will aid in ensuring that waterworks systems are sustainable into the future. The following is a summary of activities conducted during 2011-12, and the related achievements to ensure financially sustainable waterworks systems and operations.

Results

- By April 18, 2012, 89 per cent of municipalities submitted public information on the financial sustainability of their waterworks for 2010 to the Ministry of Municipal Affairs. Of these municipalities, 88 per cent indicated they had a waterworks rate policy and a capital investment strategy in place. This was the sixth year the applicable regulations, including The Municipalities Regulations, The Northern Municipalities Public Reporting on Municipal Waterworks Regulations and The Cities Regulations were in effect. The percentage of municipalities submitting public information on the financial sustainability of their waterworks has increased by 46 percent since 2010-11, when 43 per cent of municipalities submitted information.

- SaskWater uses a Cost of Service Methodology to analyze and set customer rates. SaskWater is working on aligning its rates to ensure they are based on the full cost to provide water and are fair, equitable and transparent. In 2011, SaskWater received approval from Cabinet for a three-year (2012-2014) rate adjustment, effective for the April 2012 billing period. The multi-year increase affects customers who do not have scheduled annual rate adjustments as part of their agreements. The rate increase is designed to recover increased operating costs, such as treatment costs, water purchase costs and labour, and to upgrade/replace existing infrastructure to ensure a continued supply of safe and reliable water. This is only SaskWater's second rate increase since 2007.

Measurement Results

Percentage of municipalities that have reported waterworks information on the financial sustainability of their systems and percentage of municipal waterworks that have reported that have rates that cover waterworks expenditures and debt payments

Of the municipalities that submitted their public waterworks information to the Ministry of Municipal Affairs, 49 per cent (45 per cent in 2010-11) reported waterworks revenues that covered the waterworks expenditures and debt payments.

Waterworks rates that cover waterworks expenditures and debt payments are a direct indicator of waterworks financial sustainability. The public reporting regulations facilitate consumers' understanding of the need for, and possibly acceptance of, waterworks rates that cover costs.

Municipalities must submit their long-term financial sustainability plan for their waterworks as part of their application for most infrastructure programs provided through the Ministry of Municipal Affairs.

Lack of municipal capacity will limit some smaller municipalities from establishing these waterworks policies and strategies.

The drinking water regulatory system is clear and effective

Regulations are clear and ensure that health and drinking water quality will be protected

Providing safe drinking water requires clear regulations communicated to and understood by the waterworks owners and operators. Additionally, accepted standards and practices are required to ensure requirements are met. Program delivery and related policies are necessary to track and ensure regulatory requirements are being met. Collectively, these measures will help ensure that drinking water is safe and wastewater effluent discharges do not threaten the quality of source waters or adversely impact the environment. The following is a summary of activities conducted during 2011-12, and the related achievements in working to ensure that regulations are clear and ensure that health and drinking water quality will be protected.

Results

- The Ministry of Environment continued to work towards implementation of chemical health, trace metal, and trace pesticide related water quality standards, which took effect for small waterworks in December 2010. As of March 31, 2012, approximately 81 waterworks had yet to achieve compliance with standards. Of the 81 affected communities in the province, 64 have upgrades underway and/or have received infrastructure upgrade funding to aid with improvements. Seven communities may be suitable for hygienic classification and 10 may be resolved through operational optimization. Material has been provided to waterworks owners to provide clear direction on what needs to be upgraded and the reasons why during waterworks inspections or special meetings with the facility owners.

- The Ministry of Environment participated as a member of the Federal-Provincial Committee on Drinking Water in 2011-12. During that time, review of national guidelines was conducted for turbidity, "other microbiological parameters, nitrate, lead, sodium, selenium, 1,2-dichloroethane, Microcystin-LR. In 2011-12, the ministry consulted with Saskatchewan stakeholders on national guidelines for turbidity and Heterotropic Plate Count, and prepared impact statements for Vinyl Chloride, Uranium and Nitrate/Nitrite as a means to further advancement of national guidelines in Saskatchewan. These national guidelines form the basis for drinking water quality standards in the province and other jurisdictions across Canada.

- The Ministry of Environment continued to implement round two of waterworks system assessments for those systems still required to perform assessments. This assists owners to understand what was required for round two of the assessments due by December 31, 2010. The current standards for waterworks system assessments are at www.SaskH2O.ca/DWBinder/EPB233WaterworksSystemAssessmentStandards.pdf.

- The Planning and Development Act, 2007 requires municipal land use policies on source water protection be included in new Official Community Plans (OCP). Also, statements of provincial interest include source water protection considerations, which apply to planning, development and subdivision decisions. Future provincial regulations regarding private or communal water wells may be implemented through local bylaws and incorporated into the statements of provincial interest.

- Guidance material about on-site wastewater systems for those seeking to subdivide land was prepared by an inter-ministry working group (ministries of Environment, Health and Municipal Affairs, and the Saskatchewan Watershed Authority) in 2009-11. This guidance is intended to increase water protection and improve wastewater management while streamlining the sub-division process.

- The Ministry of Environment continued to advocate the use of communal waterworks in municipal and subdivision settings through provision of comments on subdivision applications referred to the ministry in 2011-12. Similarly, the development and use of rural water pipelines was advocated during the fiscal year by the ministry as a means of providing safe and sustainable drinking water supplies.

- The ministries of Environment, Health and Municipal Affairs and the Saskatchewan Watershed Authority Guidance Document for Assessing Subdivisions (where onsite waste water treatment and disposal systems are proposed) is expected to be released before July 2012.

- During the fiscal year, Health Region public health inspectors inspected 1,046 public water supplies that fall under The Health Hazard Regulations.

- Ongoing implementation of the Ministry of Environment's "Drinking Water and Wastewater Enforcement Protocol" resulted in 23 written warnings, one Ministerial Order and 16 charges laid under The Water Regulations, 2002, and The Environmental Management and Protection Act, 2002 in 2011-12. In addition, there were five convictions for drinking water and wastewater related violations. Eleven charges are still before the courts.

- A total of 910 waterworks inspections were conducted during the reporting period in accordance with the ministry inspection protocol and targets. Environmental Project Officers (EPOs) stress the need for activities or upgrading to meet drinking water quality standards and requirements during waterworks inspections. During 2011-12, added emphasis was placed on infrastructure planning and the need to meet increased water quality related demands arising from growth. Efforts continued to aid waterworks owners in achieving the current chemical health standards for waterworks serving less than 5,000 consumers and compliance with monitoring, record-keeping and upset reporting requirements.

- The results of all waterworks inspections can be found online at www.SaskH2O.ca/MyDrinkingWater.asp, and the results of wastewater system inspections can be found online at www.saskh2o.ca/wastewaterinfo.asp . Having inspection results online is intended to increase transparency and public trust in drinking water supplies and the associated processes.

- Waterworks inspections are carried out by the EPOs and are the most important point of contact and compliance mechanism to ensure proper management of drinking water. During a three-year cycle, at least one inspection will be unannounced. Water sources such as wells or surface water intakes are re-inspected every second year. Table 7 summarizes the findings of key elements for inspections conducted during 2011-12.

Table 7: Waterworks inspection finding summary (2011-12)

Inspection Element	Non-Compliant	N/A or No Response*	Compliant
Disinfection continuous at plant	18	20	874
Disinfection Free chlorine > or = 0.1 mg/L leaving the plant	126	72	714
Monitoring daily chlorine	62	12	838
Reservoirs in good repair	20	108	784
Water treatment plant in clean and orderly condition	24	38	850
A total chlorine residual not <0.5 mg/l or a free chlorine residual not <0.1 mg/l in the distribution system	128	18	766
Bacteriological testing after completion, alteration, extension or repair	14	93	805
Reporting of chlorine upsets	44	134	734
Record keeping	60	73	779

*N/A = Non-applicable. Some waterworks inspected do not have a treatment plant such as pipeline systems. These may be recorded as N/A or No response.

Source: Ministry of Environment – Environmental Management System

The Bacteriological Follow-up Protocol for Waterworks Regulated by the Saskatchewan Ministry of Environment EPB 205 provides for the issuance of PDWAs by the ministry when there is a concern that problems (due to microbial or chemical contamination) may exist. Ministry staff also uses a protocol for upset reporting and follow-up to protect consumer health and drinking water quality. Waterworks owners and operators continue to be advised of upset reporting requirements during inspections. Emergency Boil Water Orders (EBWO) are issued by Health Region officials to deal with confirmed public health threats such as microbial contamination of drinking water. Tables 8 and 9 outline statistics for PDWAs and EBWOs issued for Ministry of Environment and Health Region regulated waterworks during the 2011-12 fiscal year.

Table 8: EBWO/PDWA Statistics for 2011-12 – Ministry of Environment Regulated Waterworks

Time	EBWO	PDWA
In effect prior to reporting period	0	69
Added during the reporting period	8	393
In effect at end of reporting period	2	76

Source: Ministry of Environment

Table 9: EBWO/PDWA Statistics for 2011-12 – Health Region Regulated Waterworks

Time	EBWO	PDWA
In effect prior to reporting period	69	140
Added during the reporting period	25	60
In effect at end of reporting period	64	98

Source: Information provided by the Health Regions in Saskatchewan

Tables 10 and 11 provide information regarding the reasons for PDWAs and EBWOs issued during the 2011-12 fiscal year for waterworks regulated by the Ministry of Environment and Regional Health Authorities. Further information on the nature of a PDWA and EBWO issued by the Ministry of Environment is available from the ministry or on the Internet (http://www.SaskH2O.ca/advisories.asp).

Table 10: Reason for issuing PDWAs and EBWOs during 2011-12 – Ministry of Environment regulated waterworks

Summary of Reasons for Precautionary Drinking Water Advisories (PDWA) Issued by Saskatchewan MOE Between April 1, 2011 and March 31, 2012		
PDWAs by Reasons		
Water Quality Reasons	Number	Percentage
Line break or pressure loss in distribution system	256	65.1
No Applicable water quality reason	48	12.2
Suspected contamination	41	10.4
Unacceptable turbidity or particle counts in treated water	31	7.9
Significant deterioration of source water quality due to environmental conditions	7	1.8
Exceedance of MAC or drinking water standard	5	1.3
Total coliforms detected in drinking water system	1	0.25
Excess disinfection levels	1	0.25
Insufficient quantity	1	0.25
E. coli detected in drinking water system	1	0.25
Cryptosporidium and/or Giardia detected in drinking water system	1	0.25
Total	393	
Operational Reasons		
Planned system maintenance	120	30.5
Power outage resulting in system pressure loss or reduced storage of treated water	77	19.6
Treatment or distribution equipment failure or damage	75	19.1
Start-up of waterworks	37	9.4
No applicable operational reason	21	5.3
Treatment unable to cope with significant deterioration of source water quality	18	4.6
Inadequate disinfection residual in distribution system	12	3.1
Contamination during construction, repair or operation	11	2.8
Does not meet minimum treatment / design requirements	6	1.5
Undetermined source of contamination	5	1.3
No or inadequate disinfection at treatment plant	2	0.6
Does not meet monitoring requirements	2	0.6
Non-commissioned plant	2	0.6
No certified or adequately trained operator as required	2	0.6
Damaged well components	2	0.6
Damaged cistern or holding tank	1	0.25
Total	393	
EBWO's by Reasons		
Water Quality Reasons		
E.coli detected in drinking water system	7	87.5
Unacceptable turbidity or particle counts in treated water	1	12.5
Total	8	
Operational Reasons		
Treatment unable to cope with significant deterioration in source water quality	3	37.5
Undetermined source of contamination	2	25.0
No applicable operational reason	2	25.0
Treatment or distribution equipment failure or damage	1	12.5
Total	8	

Source: Canadian Network for Public Health Intelligence based on Ministry of Environment PDWA and EBWO Tracking Records

During 2011-12, a total of 237 unexpected water quality or operational upsets/reasons affecting waterworks regulated by the Ministry of Environment were reported and addressed, such as system depressurizations, water main breaks, flooding related upsets, or other failures, which resulted in Precautionary Drinking Water Advisories (PDWA). Unexpected upsets or events accounted for 60.3 per cent of all PDWA's issued in 2011-12, which was 0.9 per cent more than in 2010-11, when 59.4 per

cent of the PDWA's issued were because of unexpected events. Line breaks or pressure loss was the most frequent water quality related reason for the issuance of a PDWA in 2011-12. There were 256 advisories issued for this reason. From the operational reason category, planned system maintenance was the most frequent reason for issuance of a PDWA with 120 instances of these reported events. A total of 156 (39.7 per cent) of all PDWA's in 2011-12, were issued due to anticipated events such as planned maintenance activities or startup of seasonal or new waterworks.

Table 11: Reason for issuing EBWOs and PDWAs during 2011-12 – Health Region regulated waterworks

Summary of reasons for Precautionary Drinking Water Advisories (PDWA) and Emergency Boil Water Orders (EBWO) Issued by Saskatchewan Regional Health Authorities between April 1, 2011 and March 31, 2012 Note: More than one reason can be identified per PDWA or EBWO		
Number of PDWAs by reasons		
Water Quality Reasons	Number	Percentage
Total coliforms detected in drinking water system	32	53.3
Suspected contamination	11	18.3
No Applicable water quality reason	9	15.0
Line break or pressure loss in distribution system	5	8.3
Unacceptable turbidity or particle counts in treated water	2	3.3
Significant deterioration of source water quality due to environmental conditions	1	1.7
Total	60	
Operational Reasons		
No applicable operational reason	16	26.7
Inadequate disinfection residual in distribution system	11	18.3
Does not meet monitoring requirements	6	10.0
Contamination during construction, repair or operation	4	6.7
Undetermined source of contamination	4	6.7
No or inadequate disinfection at treatment plant	3	5.0
Does not meet minimum treatment / design requirements	4	6.7
Power outage resulting in system pressure loss or reduced storage of treated water	3	5.0
Start-up of water works	2	3.3
Does not meet reporting requirements	2	3.3
Treatment or distribution equipment failure or damage	1	1.7
Treatment unable to cope with significant deterioration of source water quality	2	3.3
Non-commissioned plant	1	1.7
Planned system maintenance	1	1.7
Total	60	
Number of EBWOs by reasons		
Water Quality Reasons		
E. coli detected in drinking water system	23	92.0
Significant deterioration of source water quality due to environmental conditions	1	4.0
No applicable water quality reason	1	4.0
Total	25	
Operational Reasons		
Inadequate disinfection residual in distribution system	11	44.0
No applicable operational reason	5	20.0
Undetermined source of contamination	4	16.0
Treatment unable to cope with significant deterioration of source water quality	1	4.0
Does not meet minimum treatment / design requirements	2	8.0
Does not meet reporting requirements	1	4.0
Damaged cistern or holding tank	1	4.0
Total	25	

Source: Information provided by the Health Regions in Saskatchewan

- There were 13 Precautionary Drinking Water Advisory's (PDWA) and one Do Not Use Advisory issued on SaskWater owned potable water systems in 2011. Eleven of the PDWA's were issued

due to pipeline depressurization as a result of either SaskWater system upgrades to ensure infrastructure is safe and reliable, or due to upgrades being completed by the City of Saskatoon and/or SaskPower, which impacted SaskWater's supply facilities. Two of the PDWA's were due to high turbidity in the treated water, which was a result of the treatment plant processes being unable to handle high levels of turbidity in the source water. The Do Not Use Advisory was issued at the Gravelbourg Water Supply System due to a malfunction of a chlorine feed system resulting in too much chlorine in the drinking water. This system has been upgraded to ensure these circumstances do not reoccur.

- There is an ongoing PDWA issued by the Ministry of Environment in 2008 on SaskWater's Saskatoon Non-Potable Water Supply System – East and West. This is a situation where the ministry determined that these systems need to be permitted under The Environmental Management and Protection Act 2002 and The Water Regulations 2002. This is a non-potable water supply system that was originally developed to supply industrial customers. However, over time household users have been provided access to the supply with notice that the water is unsuitable for drinking unless treated. SaskWater has been working with these customers and has a plan in place to discontinue the supply of non-potable water while providing guidance on converting to alternative potable water sources.

The Ministry of Environment's Drinking Water and Wastewater Enforcement Protocol EPB 222 continues to provide direction and guidance for Environmental Project Officers to ensure that uniform and efficient compliance and enforcement practices are followed in dealing with non-compliance for drinking water and wastewater related violations. Protecting public health, safety of people and the environment is the overall purpose. The enforcement protocol requires that compliance be obtained initially through the use of public education and prevention as initial priorities while enforcement is a tool of last resort. Compliance related actions might also be applied when an issue is causing, or has the potential to cause, a significant risk to public health and safety, or the environment.

The implementation of the enforcement and compliance protocol continued in 2011-12, and was integral in gaining compliance in problematic or difficult situations. Twenty-three written warnings were issued for waterworks and sewage works related infractions. As well, one protection order has been issued to a non-compliant party. Sixteen charges were laid for drinking water and wastewater related infractions. There were five convictions registered for these offences. Eleven charges are still before the courts. The nature of water and wastewater related infractions encountered during the reporting period are summarized in Table 12.

Compliance Mechanisms

Compliance mechanisms consist of verbal warnings, written warnings, protection orders, and prosecution actions. Verbal warnings are issued for minor offences encountered during inspection duties. Verbal warnings are documented on inspection forms used by inspection staff to ensure proper follow-up. Written warnings consist of letters of non-compliance and notices of violation. They are issued for non-compliance detected during inspections, or when follow-up requirements identified through previous inspections or correspondence is not addressed. Waterworks and Sewage Works Protection Orders are issued to a person responsible for a system to protect human health or the environment. Table 12 provides a breakdown of infraction details during 2011-12.

Table 12: Enforcement and Compliance Activities-Drinking Water/Wastewater 2011-12

Infraction	Written Warnings Issued	Ministerial Orders issued	Charges Laid	Convictions	Alternative Measures
Failure to report upset condition at waterworks	5		2	1	
Failure to comply with permit conditions	3				
Failure to report upset condition at sewage works	2	1			
Failure to do required testing/sampling	7		1		
Chlorine residuals below minimums	2		2	1	
Failure to report low disinfection levels			1	1	
Improper record keeping			6	1	
Construction on waterworks/sewage works without permit	1				
No monthly review of records	1				
Failure to maintain records for five years			1	1	
Failure to review records	1				
Failure to report adverse water quality	1		1		
Operate waterworks without permit			1		
Failure to comply with order			1		
Total	23	1	16	5	0

- The Ministry of Environment issued 164 new or renewed waterworks operational permits during 2011-12, as a means to ensure waterworks technology and requirements to keep pace with new developments and to help protect consumer health and drinking water quality. A total of 21 pre-existing waterworks permits were amended. Another 133 wastewater works operational permits were issued, renewed or amended during the fiscal year. A total of 338 permits to construct or upgrade waterworks (194) and sewage works (144) were issued or amended over the 2011-12 reporting period. Compared with last year, this is a four per cent decrease in the number of construction permits issued. Permit application materials are available online at www.SaskH2O.ca/foroperators.asp under the heading "Forms".

- The total estimated value of the construction work for all water and wastewater projects approved by the Ministry of Environment is estimated at $293 million ($201M for water and $91M for sewer), based on data from 82 per cent of projects reporting cost estimates. Compared to last year, this is a 14 percent decrease in the total estimated value of constructed works. Notable large projects permitted this year (>$10M) include the Saskatoon Waterworks reservoir expansion and Saskatchewan Landing Regional Water Pipeline Utility Waterworks water treatment plant in Kyle Saskatchewan and associated rural distribution lines.

- For the period of this report, a total of 36,507 drinking water samples were processed at the Saskatchewan Disease Control Laboratory. A breakdown indicated that 70.4 per cent of the samples for water supplies were from Ministry of Environment regulated waterworks, 16.1 per cent were from private customers and 13.5 per cent of the water samples were from Ministry of Health/Health Regions.

Measurement Results

Number of accredited drinking water testing laboratories

Table 13: Number of accredited drinking water testing laboratories

March 2002	March 2003	March 2004	March 2005	March 2006	March 2007	March 2008	March 2009	March 2010	March 2011	March 2012	Annual Change
1	2	4	6*	6*	6*	6*	6*	6*	7*	7	0

* All labs performing or have performed analysis for waterworks regulated by the Ministry of Environment

Source: Standards Council of Canada web (http://www.scc.ca/en/news_events/notices/lab.shtml)

Laboratory accreditation shows that the facility has a recognized quality assurance and quality control system that assures representative analytical results. Laboratory accreditation was selected as a measure to help gauge results in ensuring safe drinking water for Saskatchewan residents. As of March 31, 2012, all seven laboratories in Saskatchewan that perform analysis of drinking water samples retained accreditation by the Standards Council of Canada or the Canadian Association for Laboratory Accreditation (Table 13). Accredited laboratories include: Ministry of Health – Saskatchewan Disease Control Laboratory, Saskatchewan Research Council, ALS Laboratory Group, the City of Regina Wastewater Laboratory, BDS Laboratories, the City of Saskatoon Laboratory and the Buffalo Pound Filtration Plant Laboratory.

Professional regulatory staff have access to the tools necessary to ensure compliance

Providing safe drinking water requires accessible training and tools for staff. The tools take the form of working agreements, computerized information systems, rugged notebooks for data collection in the field, as well as examples, guidelines and educational information needed to deliver programming. Staff qualifications must also be assured and kept current with new or evolving water management and information gathering processes. Collectively, these tools help staff to ensure that drinking water is safe and that wastewater effluent discharges do not threaten the quality of source waters or adversely impact the environment. The following is a summary of activities conducted during 2011-12, and the related achievements in working to ensure that professional regulatory staff has access to the tools necessary to ensure compliance.

Results

- The Ministry of Environment program delivery staff and managers held several formal meetings with Health Region representatives in 2011-12, to discuss drinking water and wastewater related programming, progress and waterworks concerns in their particular service regions.
- In conjunction with the Ministry of Environment's Compliance and Field Services Branch, the Municipal Branch revised its approach to compliance and enforcement to align with a new ministry organizational structure, which took effect in April 2010. This approach continued during 2011-12.
- Routine maintenance of the Ministry of Environment's Environmental Management System (EMS) and enhancements of the digitized Remote Inspection forms were completed.
- A new listing of landfills was added to www.SaskH2O.ca to provide information on landfill/transfer station statuses. This information will help protect drinking water source supplies.
- The Ministry of Environment was involved in the Environmental Management System (EMS) Server migration and a database platform upgrade to Oracle 11G, as a means to ensure ongoing drinking water management related capacity.

- During 2011-12, over 44,000 samples and 245,000 measurements were updated in the Ministry of Environment's Environmental Management System (EMS). These samples/measurements include, but are not limited to surface water, distributed water, effluent and precipitation.

Measurement Results

Number and average duration of visits to the www.SaskH2O.ca website

Table 14: Number and average duration of visits to the www.SaskH2O.ca website

Time Period	June 21, 2003 to March 31, 2004*	April 1, 2004 to March 31, 2005	April 1, 2005 to March 31, 2006	April 1, 2006 to March 31, 2007	April 1, 2007 to March 31, 2008	April 1, 2008 to March 31, 2009	April 1, 2009 to March 31, 2010	April 1, 2010 to March 31, 2011	April 1, 2011 to March 31, 2012
Number of Visits to SaskH2O Website	27,015	49,862	58,837	68,834	91,418	109,399	130,228	164,566	184,570
Duration of Website Visit (Minutes: Seconds)	7 : 28	7 : 55	7 : 24	10 : 53	25 : 43	10 : 00	09:06	09:39	11:44

*SaskH2O.ca website launched on June 21, 2003.

Source: Webtrends information system

The number and average duration of visits to the SaskH2O website is a good measure of the use of tools that help ensure the protection of drinking water. During 2011-12, there was a significant increase in the number of visits to the website (Table 14). There was also a slight increase in the in the duration of visits compared to the previous three fiscal years.

High quality source waters are protected now and into the future

Risks to source water quality are known

Protecting source water quality is a vital part of providing safe drinking water. Identifying risks to source water quality is the first step in developing actions and strategies to protecting it; thereby minimizing the cost of treating drinking water. Through the watershed planning actions, it is expected that other risks to source water quality will be identified. The following is a summary of activities conducted during 2011-12, and the related achievements in working to ensure that risks to surface water quality are known.

Results

- Work continued this year on conducting a water demand study to examine potential future water use by major drainage basin and economic sectors of the province. A water supply model for the Qu'Appelle River system was completed.

- Work on the Carrot River Watershed Plan was completed.

- The Saskatchewan Watershed Authority (SWA) continued to collect and assess water quality data from critical sites related to SWA activities. Data was collected from Fishing Lake, Lake Lenore, Qu'Appelle River and Qu'Appelle Valley lakes, in order to determine ecosystem health status and trends and inform decision-making.

- The Saskatchewan Watershed Authority continued a Watershed Evaluation of Beneficial Management Practices (WEBs) study initiated in 2010-11, to evaluate on a watershed level, the impacts of beneficial management practices on water quality parameters such as nutrients, pathogens, and sediments. The WEBs project, funded by Agriculture and Agri-food Canada, is one of a number of similar projects across Canada intended to measure the impacts of agricultural beneficial management practices (BMPs). The second year of this study involves the application of selected beneficial management practices at all sites as well as continuing with data collection.

- The Ministry of Environment implemented wastewater effluent characterization monitoring at approximately 91 municipal wastewater systems across Saskatchewan in spring and fall 2011. Effluent toxicity testing was conducted for 23 medium and small communities in the province that may be subject to the pending "Canada Wide Strategy on Municipal Waste Water Effluents". The results of toxicity testing from spring 2011 are portrayed in Figure 5.

- The Ministry of Environment reviewed applications and issued 34 permits for chemical control of Aquatic Nuisances in and/or near surface water in accordance with Section 35 of The Environmental Management and Protection Act, 2002 .

- The ministry also provided technical guidance to large effluent emitters on monitoring that is necessary to achieve compliance with the wastewater requirements and effluent characterization activities in accordance with the "Canada Wide Strategy on Municipal Waste Water Effluents". The Ministry worked in close consultation with the City of Regina in establishing the effluent quality requirements and a schedule for upgrading of the city's sewage treatment works. Further information on the "Canada Wide Strategy for Municipal Waste Water Effluents" is available at: www.ccme.ca/assets/pdf/cda_wide_strategy_mwwe_final_e.pdf .

- Ministry staff also reviews the results of routine wastewater effluent discharge testing to address any complaints that arise due to wastewater effluent releases.

- During the 2011-12, 554 inspections at wastewater works were completed by Ministry of Environment staff. Information gained from comprehensive inspection results is useful in protecting source water and aquatic habitat. It will also be used to move towards compliance with the pending "Canada-Wide Strategy for Municipal Waste Water Effluents", thereby advancing wastewater management in the province. A total of 133 additional wastewater works were issued, renewed or amended in 2011-12.

- Under The Pest Control Products (Saskatchewan) Act, there were 2,056 pesticide applicator licenses issued, 634 service (businesses) licenses and 421 pesticide vendor licenses. Each vendor maintains an approved storage facility registered and approved by the industry and the Ministry of Environment. An applicant for a pesticide applicator license must pass a recognized pesticide applicator course. The applicator training is valid for a five year period; however, the applicator license is renewed on an annual basis.

Measurement Results

Number of sewage effluent discharges that represent a risk to source waters

Table 15: Number of sewage effluent discharges that represent a risk to source waters

March 2004	March 2005	March 2006	March 2007	March 2008	March 2009	March 2010	March 2011	March 2012	Annual Change
93	93	85	116	114	114	112	105	128	↑23

Source: Ministry of Environment – Environmental Management System

As of March 31, 2012, approximately 128 wastewater systems have been identified as having a discharge that may reach a surface water body and represent a risk to source waters under certain conditions (Table 15). Of these 128 systems, approximately 93 may require compliance with pending Canada-wide Standards for Municipal Waste Water Effluent (MWWE) and the Wastewater System Effluent Regulations (WSER) being developed pursuant to the federal Fisheries Act. The final number of wastewater systems, which must be managed to the MWWE and WSER standard, will be finalized once an administrative agreement is developed between the Ministry of Environment and Environment Canada. Growth in Saskatchewan communities is also placing additional pressure on sewage infrastructure as some communities were at treatment and/or storage capacity. On an annual basis, ministry staff reviews the quality of effluent from each regulated sewage works. Reduction of ammonia and chlorine residual emissions within treated wastewater effluent, sewage works capacity or other treatment capability issues typically involve significant planning, investment and construction. Therefore, it can be expected that reductions in the number of works, which represent a risk to source waters, will be a time consuming process.

The number of sewage effluent discharges that represent a risk to source waters is a direct indication of the potential for source water contamination due to poor wastewater treatment. This measure now incorporates the need for future compliance with MWWE standards and pending WSER requirements. This measure was selected since it is the most direct measure of the number of potential significant contamination point sources. Work to resolve problematic wastewater systems will continue in the foreseeable future.

Watersheds are protected, natural purification and protection processes are maximized, and potential for contamination is minimized

Protection of source waters can reduce the cost of water treatment and improve water quality while helping to sustain the resource for other uses. Sound water resource management means the processes responsible for breaking down wastes must be protected, as must the land use practices responsible for protecting water from contamination. Actions in terms of both organizational structure and watershed/water management are improving source water protection in the province. The following is a summary of activities conducted during 2011-12, and the related achievements in working to ensure that watersheds are protected, natural purification and protection processes are maximized and potential for contamination is minimized.

Results

- The Ministry of Environment continued to participate in the CCME Municipal Waste Water Effluent (MWWE) Coordinating Committee to help assure consistent implementation of national performance standards across Canada as well as to improve source water protection and water quality management in the rivers and lakes of Saskatchewan. Implementation of the CCME MWWE strategy commenced with active monitoring to improve source water protection and water quality management in the rivers and lakes of Saskatchewan. The Ministry of Environment represented Saskatchewan on the CCME Environmental Effects Monitoring (EEM) working group, attended face-to-face meetings, teleconference meetings, and continued working on developing a receiving environment monitoring program to aid jurisdictions including Saskatchewan.

- During 2011-12, the Ministry of Environment continued to participate in Biosolids Task Group (BTG), formed under the Canadian Council of Ministers of Environment (CCME), to develop national guidance/practices and a beneficial use policy on the management of residual solid materials (biosolids), which arise through treatment processes. The ministry actively participated in all BTG meetings; public consultation with key stakeholders on Canada-wide approach on biosolids management was completed during 2011. The final BMP and guidance report is expected to be published fall 2012.

- The Ministry of Environment maintained its representation on the Canada-wide Science Research Co-ordination Body (SRCB) and provided input for improved science, research and coordination among regulators, researchers and municipalities during implementation of CCME Strategy for the Management of Municipal Wastewater Effluent and biosolids.

- The Ministry of Environment represented the province on the Canadian Council of Ministers of the Environment (CCME), Water Quality Task Group (WQTG) for the development of science-based water quality, sediment, and tissue residue guidelines (Canadian Environmental Quality Guideline-CEQG) for the protection of aquatic life and other beneficial water uses in the province. During 2011-12, review of guidelines for chloride and Trichlorfon was undertaken. Work also continued with WQTG members, including direct representation of the Saskatchewan Ministry of Agriculture in revising/developing CEQG for irrigation and livestock water use. Substances of priority were identified; a consultant report was reviewed and work on finalizing guidelines for pathogens in irrigation water and sulphate for livestock watering was conducted.

- The Municipal Branch of the Ministry of Environment undertook one year sampling and research studies in Saskatchewan to characterize/evaluate the treated effluent of municipalities that are affected by the Canadian Council of Ministers of Environment (CCME) Municipal Wastewater Effluent Strategy. Costs of these studies exceeded $85,000. The studies were also aimed to determine the impact of effluent discharges on fish-bearing surface water bodies and help the municipalities in establishing site-specific Effluent Discharge Objectives (EDOs) for various wastewater parameters. Toxicity testing requirements are analyzed by a specialized laboratory and the results of seasonal sampling showed that nearly 10% of the sampled communities failed with respect to acute toxicity requirements, however, repeat sampling will continue in the next fiscal (2012/13) for these failed communities. The sampling results are shown in Figures 5 and 6.

Figure 5: Acute Toxicity Results – Total Pass/Fail

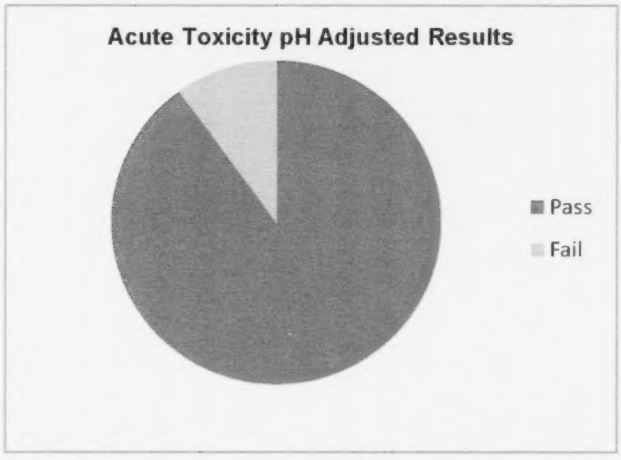
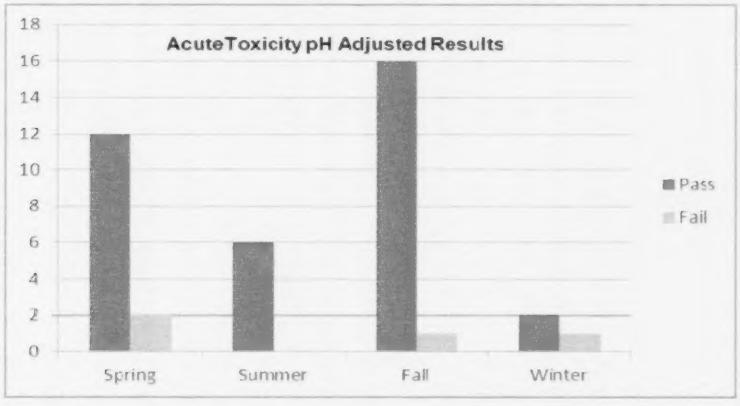
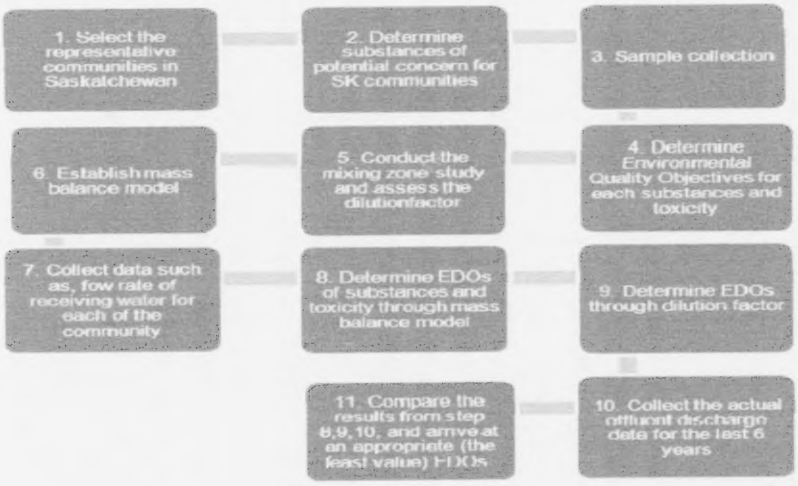


Figure 6: Acute Toxicity Results of Seasonal Samples



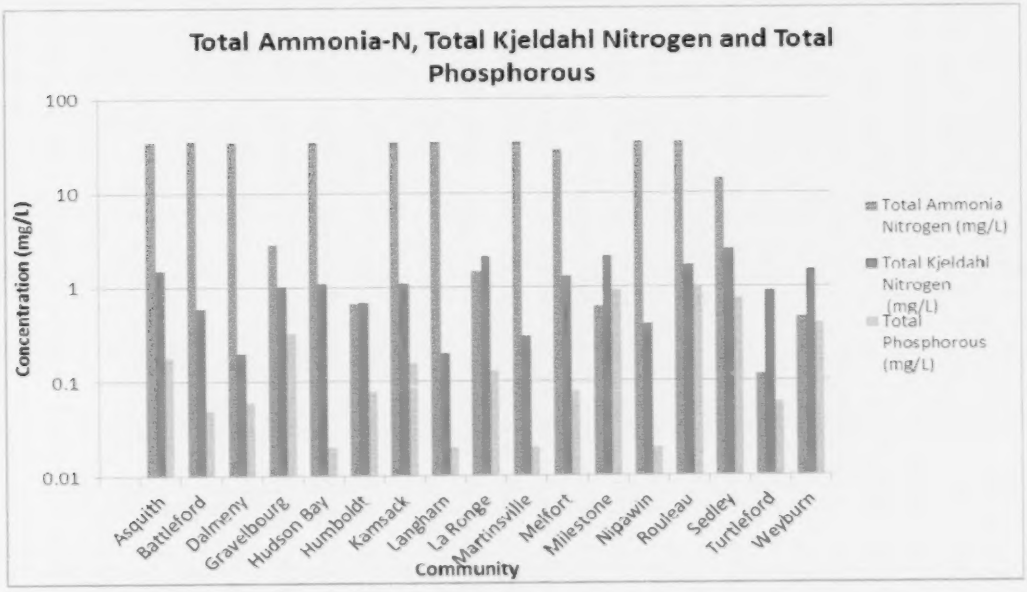
- Municipal Branch staff supervised a group of University of Regina engineering students who worked on a research project to establish site-specific effluent discharge objectives (EDOs) for selected communities in Saskatchewan. The results of the study showed that EDOs can be established through risk management and modeling, and the steps that are followed in establishing the EDOs for selective Saskatchewan communities are shown in Figure 7.

Figure 7: Establishing site-specific EDOs for communities- Protocol


1. Select the representative communities in Saskatchewan
2. Determine substances of potential concern for SK communities
3. Sample collection
4. Determine Environmental Quality Objectives for each substances and toxicity
5. Conduct the mixing zone study and assess the dilutionfactor
6. Establish mass balance model
7. Collect data such as, fow rate of receiving water for each of the community
8. Determine EDOs of substances and toxicity through mass balance model
9. Determine EDOs through dilution factor
10. Collect the actual effluent discharge date for the last 6 years
11. Compare the results from step 8,9,10, and arrive at an appropriate (the least value) EDOs

The EDOs determined for some parameters, such as total ammonia nitrogen, total kjeldahl nitrogen (TKN), and total phosphorus are shown in the following Figure 8.

Figure 8: Effluent Discharge Objectives for Certain Parameters for Selected Saskatchewan Communities



- In 2011, SaskWater completed construction of an effluent irrigation demonstration research site and has completed its first year of operation. This research project is expected to operate for five years and gather data on applying an alternative waste disposal technique to Saskatchewan conditions. The project uses wastewater effluent to irrigate tree plots. It is expected to significantly lower capital and operating costs and result in zero discharge into surface water bodies. Several tree varieties are being examined to determine the most suitable type. This project is a partnership between SaskWater, the City of Moose Jaw, Communities of Tomorrow, Prairie Adaptation Research Collaborative (PARC), the Ministry of Agriculture and the Agroforestry Development Centre (ADC).

- Work continued on updating surface water quality objectives at the 11 Prairie Provinces Water Board sites, located on the borders between Alberta, Saskatchewan and Manitoba, with a priority on drafting nutrient objectives.

- The Saskatchewan Watershed Authority, in partnership with the Health Canada and federal Ministry of Indian and Northern Affairs Canada, led a risk assessment on the water supply for Cowessess First Nation as a means to develop recommendations to minimize risks.

- The Statements of Provincial Interest Regulation (SPI) was adopted on March 29, 2012. The SPI facilitates the incorporation of water interests of the province into local and regional planning documents under several interests. The SPI contains an interest specifically for source water protection of the resource for human and hygienic use. Further, the SPI address the importance of water under interests relating to public works, sand and gravel, biodiversity and natural ecosystems, public safety, shorelands and water bodies. The SPI is being implemented through Government Relations, Community Planning Branch and municipal bylaws. Training material is available for use in municipal development workshops and for municipalities adopting official community plans.

- The Ministry of Agriculture provides funding through the Agriculture Development Fund to support research and development, including agricultural technologies for improved management and/or reduced environmental risks of pesticides, fertilizers and livestock manure. There are eight ongoing water-related projects with a total funding allocation of $620,019. Of those, three projects ($11,619) are funded under Growing Forward in partnership with Agriculture and Agri-Food Canada. Projects are in irrigation agronomy and technology, water conservation and water quality.

- The Ministry of Agriculture administers The Irrigation Act, 1996. The legislation ensures soils and water are suitable for sustainable irrigation. Irrigation soils, water quality and water tables are monitored for sustainability. Technical assistance is provided to the Ministry of Environment on effluent disposal via land application to help ensure a high level of environmental protection and ongoing agricultural productivity.

- The Ministry of Agriculture requires intensive livestock operations to develop waste storage and management plans that will not contaminate water resources and in 2011-2012, there were nine plan approvals issued for intensive operations. Some approvals were for expansions and/or modifications to existing operations. Approximately 86 site inspections were completed. Monitoring continues for surface quality in watercourses adjacent to intensive livestock operations. The 2003 Surface Water Quality Monitoring Report is available online at www.agriculture.gov.sk.ca/Default.aspx?DN=ab517097-0749-4293-b98e-dbe1935deefa.

- The Ministry of Agriculture is responsible for the delivery of the environment component of Growing Forward. It consists of Environmental Farm Planning, Agri-Environmental Group Planning and the Farm Stewardship Program. Environmental Farm Planning and the Farm Stewardship Program are delivered through a third party contract with the Provincial Council of Agriculture Development and Diversification (ADD) Boards. Agri-Environmental Group Planning is delivered on a watershed basis and is led by farmers who live in the watershed. There is also one group plan that is

delivered on a provincial basis through a third party contract with SARM. It deals with education and planning on the control and eradication of invasive plant species.

- In the 2011-12 fiscal year, spending on the environment component was as follows: Group plan delivery - $929,000; PCAB delivery – $1,420,000; Farm Stewardship Program - $7,455,806. In terms of activity 443 new endorsed environmental farm plans were produced with 1346 producers being approved for 3,885 farm stewardship projects. Producers have also made claims and been paid for 2,390 projects under the program. The total number of new environmental farm plans that have been developed since the start of Growing Forward now stands at 1,170. Since the inception of Environmental Farm Planning in 2005 the total number of endorsed environmental farm plans in Saskatchewan is 11,970.

Measurement Results

Number and percentage of municipalities with bylaws in place to protect their drinking water supplies

Table 16: Number and percentage of municipalities with bylaws in place to protect their drinking water supplies

December 2005 Baseline		December 2006		December 2007		December 2008		December 2009		December 2010		December 2011	
Number	Per Cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent
178	22	178	22	181	23	182	23	188	24	201	26	204	26

Source: Ministry of Municipal Affairs

The number of municipalities with bylaws in place to protect their drinking water supplies is a direct indication of the level of municipal protection of water sources.

In 2011, three municipalities adopted new municipal planning bylaws that require drinking water protection provisions. The per cent of the urban and rural municipalities with some form of water management policy contained in their community planning bylaws remained at 26 per cent. Through mandatory source water protection policies under the Planning and Development Act, 2007, the Statements of Provincial Interest and the "Planning for Growth" funding initiative, 158 municipalities have been assisted in developing regional planning capacity and plans. Twenty-three northern municipalities are being assisted in developing official community plans with support from the Planning for Growth North funding initiative. And, along with the ongoing work of the Municipal Capacity Development Program, municipalities are becoming increasingly aware of their responsibility for source water protection, which is reflected in their bylaws.

Water Quality Index ratings for rivers

Table 17: Water quality index ratings for rivers (three year average water quality index values and ratings for rivers)

Location	2005 -07*	2005-07 Rating*	2006 -08	2006-08 Rating	2007-09	2007-09 Rating	2008-10	2008-10 Rating
Assiniboine River (Highway #8)	79.3	Fair	75.6	Fair	83.2	Good	83.0	Good
Battle River (Battle Rapids)	78.9	Fair	84.3	Good	81.1	Good	72.4	Fair
Beaver River (Beauval)	80.5	Good	83.3	Good	91.4	Good	74.6	Fair
Beaver River – (Dorintosh)	75.1	Fair	76.3	Fair	83.3	Good	74.2	Fair
Churchill River (Otter Rapids)	88.2	Good	90.8	Good	83.4	Good	83.5	Good
North Saskatchewan River (Upstream Highway #16 Bridge)**	71.9	Fair	92.7	Good	91.7	Good	91.7	Good
North Saskatchewan River (Borden Bridge)	80.8	Good	82.2	Good	83.3	Good	91.7	Good
North Saskatchewan River (Prince Albert)	73.8	Fair	71.5	Fair	66.6	Fair	83.4	Good
North Saskatchewan River (Cecil Ferry North Bank)	84.4	Good	80.6	Good	75.2	Fair	83.4	Good
North Saskatchewan River (Cecil Ferry – South Bank)	73.1	Fair	80.2	Good	75.2	Fair	83.4	Good
Qu'Appelle River (below Qu'Appelle Dam)	95.5	Excellent	100.0	Excellent	100.0	Excellent	100.0	Excellent
Qu'Appelle River (at Highway # 2)	79.1	Fair	80.3	Good	74.8	Fair	83.2	Good
Qu'Appelle River (above Wascana Creek)	58.4	Marginal	65.5	Fair	82.2	Good	74.9	Fair
Qu'Appelle River (Highway #11 at Lumsden at rock dyke)	62.8	Fair	61.4	Fair	82.9	Good	74.8	Fair
Qu'Appelle River (Highway #56)	70.2	Fair	70.3	Fair	90.6	Good	90.8	Good
South Saskatchewan River (Leader)	81.5	Good	71.5	Fair	74.2	Fair	65.6	Fair
South Saskatchewan River (near Outlook)	94.5	Good	94.8	Good	83.3	Good	83.2	Good
South Saskatchewan River (near Queen Elizabeth power station)	95.5	Excellent	95.5	Excellent	91.7	Good	91.7	Good
South Saskatchewan River (west Clarkboro)	90.9	Good	91.0	Good	91.7	Good	91.7	Good
South Saskatchewan River (near Muskoday)	64.8	Fair	72.8	Fair	75.0	Fair	83.4	Good
Saskatchewan River (Highway #6)	90.4	Good	86.3	Good	83.5	Good	91.7	Good
Souris River (Highway #39)	70.1	Fair	63.5	Fair	62.9	Marginal	69.3	Fair
Tobin Lake (at E.B. Campbell Dam)	80.9	Good	81.9	Good	82.7	Good	76.3	Fair

*Index values and ratings were re-calculated in May 2010 for 2006-2008, based on the Canadian Environmental Sustainability Indicator (CESI) methodology. The CESI methodology differs from methodologies used to calculate the index in previous years and therefore the results are not directly comparable to previous values. The Ministry of Environment intends to employ the CESI water quality index methodology in future years.
** Data for 2008 only

Source: Ministry of Environment surface water quality monitoring results

The Water Quality Index (WQI) is a measure of the quality of ground water and surface water for specific uses, such as the protection of aquatic life, livestock watering, recreation, etc. that may not otherwise be apparent through individual water quality test results. The levels of chemicals and organisms in the samples are compared with the WQI levels for the safety and health of the people. The WQI is a composite measure of different chemicals and organisms in the water and whether the water quality is safe for particular uses. The WQI incorporates three elements:

- Scope – the number of variables that do not meet the water quality objectives;
- Frequency – the number of times that variables do not meet the objectives; and
- Amplitude – the amount by which the objectives are not being met.

The WQI ratings provide a measure of the quality of water in Saskatchewan's rivers and allow a comparison of results over time. However, a limited number of samples are taken in any year and this, as well as changes in water levels and river flow from year to year, can produce significant annual changes in the index. To provide a more meaningful picture of longer term change that is still sensitive to underlying changes, the WQI for rivers has been presented as a three-year mean. The latest WQI values were provided for 2008-2010. Some stations showed a modest improvement in water quality based on the index calculations; some showed a slight decline.

From these elements, the WQI produces a score between zero and 100. The government has limited direct control over the results of this broad measure of water quality. While the government regulates point source pollution, many human and natural factors can influence water quality.

The following descriptive categories are used to further explain the WQI results:

- Excellent: (value 95-100) – water quality is protected with a virtual absence of threat or impairment; conditions very close to desirable levels. These index values can only be obtained if all measurements are within objectives virtually all of the time.
- Good: (value 80-94) – water quality is protected with only a minor degree of threat or impairment; conditions rarely depart from desirable levels.
- Fair: (value 60-79) – water quality is usually protected, but occasionally threatened or impaired; conditions sometimes depart from desirable levels.
- Marginal: (value 45-59) – water quality is frequently threatened or impaired; conditions often depart from desirable levels.
- Poor: (value 0-44) – water quality is almost always threatened or impaired; conditions usually depart from desirable levels.

Citizens and consumers trust and value their drinking water and the operations which produce it

Consumers value quality water and are willing to pay for it

The following is a summary of activities, which were conducted during 2011-12, and the related achievements in working to ensure that consumers value quality water and recognize the need to pay for it.

Results

- The Ministry of Environment continued to provide information on water conservation through their fact sheets, discussion with waterworks owners, the SaskH2O website at www.SaskH2O.ca, as a means to help increase consumer confidence in their water supplies. The ministry also assisted with the planning and delivery of a northern water workshop in April 2011, for the eighth year in succession.

- During 2011-12, the ministry maintained up-to-date information on the SaskH2O website at www.SaskH2O.ca/DWBinder.asp, to provide information to the public on the topics of water cost and value. These documents were also distributed directly during waterworks inspections.

- In 2011, SaskWater continued to deliver its The Value is Clear campaign to create higher awareness of the value of water and of the value of SaskWater as a water and wastewater service provider.

- On a biennial basis, SaskWater polls customers on key customer satisfaction measures including water quality, price and access to information. The next scheduled survey will be in 2012.

Measurement of Results
Per cent of survey respondents indicating that they are willing to pay more for their drinking water

Table 18: Per cent of survey respondents indicating that they are willing to pay more for their drinking water

Dec 2001	May 2003	Mar 2005	Mar 2006	May 2007	Feb 2008	May 2009	Mar 2010	May 2011	May 2012	Change
61	61.9	68	70.8	67.8	68.8	66.5	65.5	65.8	71.3	↑5.5

Source: Ministry of Environment Polling Results – May 2012

Based on a poll conducted by the Ministry of Environment in May 2012, 71.3 per cent of people polled are willing to pay more to improve their drinking water (strongly agree or agree) (Table 18). This value is 5.5 per cent more than the previous poll in May 2011, and is 10.3 per cent greater than the December 2001 poll results. This increase is considered to be a significant change since May 2011. The May 2012, polling results continue to show ongoing public recognition of the value of water and related willingness to pay for it. These polling results may be related to the high level of confidence in safety of drinking water, ready access to information on drinking water quality, greater profile of water related issues in the media such as the Prince Albert and Weyburn water contamination events of early 2012, or the profile of precautionary drinking water advisories and emergency boil water orders illustrating the government is working to improve drinking water management.

Table 19: Summary of regional polling results on survey respondents indicating that they are very or somewhat confident in the quality of their tap water

% Somewhat Agree or Strongly Agreeing	2011				2012			
	North	Regina	Saskatoon	South	North	Regina	Saskatoon	South
I am willing to pay more to improve the safety or the quality of my drinking water.	64.7%	66.1%	63.8%	67.1%	71.6%	62.9%	75.0%	73.3%

Source: Ministry of Environment Polling Results – May 2012

In terms of regional differences (Table 19), all regions show an increase in somewhat or strong agreement except for the City of Regina since 2011, in terms of willingness to pay more for improved water quality and safety. In 2012, 62.9 per cent of Regina residents somewhat or strongly agree with this statement compared to 66.1 per cent in 2011.

Citizens and consumers trust the quality and reliability of their drinking water systems and are confident in the regulatory system

Consumer's trust in drinking water and in the regulatory systems that govern water-related activities is vital to ensuring the long-term sustainability of waterworks. Consumers who trust the quality and reliability of their water supplies are more willing to support the production of safe drinking water in the future. Release of polling results also bolsters transparency and public trust. The following is a summary of activities conducted during 2011-12, and the related achievements in working to improve citizen and consumer trust in the quality and reliability of their drinking water systems and confidence in the regulatory system.

Results

- The Ministry of Environment conducted polling to determine public opinion associated on drinking water safety in May 2012. The polling results show the measurement of results. Public opinion remains as an important mechanism in determining the level of success in attaining government's safe drinking water goals.

- The Ministry of Environment directly supported training opportunities including aiding the Saskatchewan Association of Northern Communities, Northern Water Conference in April 2011. The Ministry also supported the Saskatchewan Water and Wastewater Association (SWWA) for their midterm membership meeting in June 2011 and annual convention in November 2011, and provided organizational aid and instruction to operators during training sessions. Ministry staff also supported SWWA by providing instruction during dedicated operator training workshops hosted at locations across the province throughout the year.

- The Ministry also contributed to the annual Saskatchewan Association of Rural Water Pipelines (SARWP) conference in December 2011 by providing instruction and workshop presentations. Information continued to be provided through fact sheets on water conservation, by means of discussion with waterworks owners and through the SaskH2O website at www.SaskH2O.ca, as a means to help increase consumer confidence in their water supplies.

Measurement Results

Per cent of survey respondents indicating that they are very or somewhat confident in the quality of their tap water

Table 20: Per cent of survey respondents indicating that they are very or somewhat confident in the quality of their tap water

Dec 2001	May 2003	Mar 2005	Mar 2006	May 2007	Feb 2008	May 2009	Mar 2010	May 2011	May 2012	Change
72	87	86	87.3	82.6	86.6	89.9	88.7	85.5	89.7	↑4.2

Source: Ministry of Environment Polling Results – May 2012

Based on a poll conducted by the Ministry of Environment in May 2012, 89.7 per cent of people polled strongly agreed or agreed they are confident in the safety of their own drinking water (Table 20). These polling results continue to show a high level of confidence and represent an increase of 4.2 per cent from the previous year. The results are 17.7 per cent greater than December 2001, when 72 per cent of people surveyed were very or somewhat confident in the quality of their tap water. Actions such as consumer education, waterworks inspections, media coverage of water contamination events affecting larger centres, implementation of water quality standards, water workshops, and consumer notification help build confidence in the safety of drinking water at a relatively high level, in the mid to high 80 per cent range since 2003. Ongoing attention to these elements of drinking water protection will help to

maintain the high level of public confidence in safety of drinking water in the future. The measure is important since it provides an indication of how efforts to ensure safe drinking water are progressing.

Table 21: Summary of regional polling results on survey respondents indicating that they are very or somewhat confident in the quality of their tap water

% Somewhat and Strongly Agreeing	2011				2012			
	North	Regina	Saskatoon	South	North	Regina	Saskatoon	South
Saskatchewan residents have safe drinking water.	88.8%	83.9%	86.9%	80.2%	87.1%	87.9%	84.8%	86.9%
I am confident that my drinking water is safe.	85.3%	89.8%	88.5%	81.9%	85.3%	92.2%	95.5%	87.3%

Source: Ministry of Environment Polling Results – May 2012

In terms of regional differences (Table 21) in May 2012, Regina and northerly residents are more likely to somewhat agree or strongly agree that Saskatchewan residents have safe drinking water than residents of Saskatoon or southerly regions. Further, in May 2012, Regina and Saskatoon residents are more likely to somewhat agree or strongly agree that they are confident in the safety of their drinking water, compared to residents of northerly and sourtherly regions. However, confidence in the safety of individual resident drinking water was high across the province with polling results ranging from 85.3 per cent in northerly regions to 95.5 per cent in Saskatoon. Polling results did not provide any direct indication as to why confidence levels changed from 2011 to 2012.

Citizens have meaningful access to information about their water quality

Information on water quality is important in building public trust in water systems. It must be understandable, current and readily accessible. To build full trust, information needs to be available both from the waterworks owner and the regulator. The following is a summary of activities conducted during 2011-12, and the related achievements in working to ensure citizens have meaningful access to information about the quality of their drinking water.

Results

- SaskWater publishes an annual Comprehensive Water Quality Report highlighting water quality parameters for all of its service areas. The Water Quality Report 2011 is available at http://www.saskwater.com/MediaCentre/Documents/2011WaterQualityReport.pdf.

- The results of waterworks inspections can be found online at www.SaskH2O.ca/MyDrinkingWater.asp, and the results of wastewater system inspections can be found online at www.saskh2o.ca/wastewaterinfo.asp. Having inspection results online is intended to increase transparency and public trust in drinking water supplies and the associated regulatory processes. Statistics regarding the use of the SaskH2O website can be found on page 27 of this report.

Measurement Results
Number of system owners that publicly release water quality results

Table 22: Number of system owners that publicly release water quality results

Mar 2002	Mar 2003	Mar 2004	Mar 2005	Mar 2006	Mar 2007	Mar 2008	Mar 2009	Mar 2010	Mar 2011	Mar 2012	Annual Change
3	118	359	508	494	511	637	653	681	698	715	↑17

Source: Ministry of Environment – Environmental Management System

As of March 31, 2012, 715 of 789 Ministry of Environment regulated waterworks owners publicly released water quality results to the consumers that they serve (Table 22). This value represents a significant increase of 17 since 2010-11, and represents 90.6 per cent of waterworks regulated by the Ministry of Environment in 2011-12. Notification to consumers is required on an annual basis for waterworks regulated by the Ministry of Environment. The ministry continues to pursue further progress on attainment of public reporting requirements during 2012-13. The number of system owners that publicly release water quality results is a good way to determine if consumers have direct meaningful access to information about the quality of their water. Additional waterworks specific information on drinking water quality is also available at www.SaskH2O.ca/MyDrinkingWater.asp.

Reduced consumption of water

Reduced consumption of water is important in minimizing costs and thereby, properly valuing water. Water conservation is also necessary to protect water source quality and abundance, particularly in time of increased demand. The following is a summary of activities, which were conducted during 2011-12, and the related achievements in working to reduce consumption of water.

Results

- The Saskatchewan Watershed Authority (SWA) continued to deliver the third year of the four-year Provincial Toilet Replacement Rebate Program to the residential sector as well as institutions, non-profit organizations, municipalities and First Nations.
- The potential of expanding water conservation in homes to increase sustainability through efficient water use and a reduction of CO2 emissions was reviewed. New options are being further developed to augment the Toilet Replacement Rebate Program.
- SWA received permission to use the American Water Sense logo.

Measurement Results

Average per capita consumption [litres per capita per day]

Table 23: Average per capita consumption [litres per capita per day]

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Annual Change
346	368	348	367	331	323	338	333	328	335	326	N/A	↓9

N/A: A complete dataset for 2011 was not available at the time this report was prepared. The database source of the performance results for this measure has a time lag of about six months; January 1 to December 31, 2011, data will be available in July 2012.

Note: Since 2009, water consumption values are reported in metric units. Water use for previous years have also been converted to metric units using a more precise conversion factor that accounts for slight differences reported for 2008-09, and previously.

Source: Saskatchewan Community Water Use records for 2010, published June, 2011.

Measuring the municipal per capita water consumption provides for total annual urban water use (in-home, business and municipal irrigation) within communities (Table 23). The annual consumption is affected by summer irrigation demands, which vary between wet and dry years causing the performance measure to vary between years. The Saskatchewan Watershed Authority does not have direct control over this measure; but, through water conservation programs, does influence the measure.

This measure is computed by summing the litres per capita per day (LCD) for each community and dividing by the number of communities. The weighted LCD is computed by summing the yearly water consumption for each community and dividing by the total population and 365 days. The Saskatchewan Community Water Use Records maintained by the Saskatchewan Watershed Authority is the dataset used in this determination. The change in the water consumption rate is attributed to the natural annual variability found in water consumption records and climatic, technological and behavioural influences on water use.

Over the 2005 to 2011 period, the Saskatchewan Watershed Authority and the Ministry of Environment have promoted responsible water use through public education, partnerships and programs such as the Provincial Toilet Replacement Rebate Program.

2011-12 Financial Overview

Actual expenditures relating to drinking water management in 2011-12 were $93.9 million, $24.2 million higher than the budgeted expenditures of $69.7 million. This net variance is primarily attributable to extra expenditures for flood relief in preparation for spring 2012.

Within the Ministry of Environment, the net under expenditure was primarily the result of vacancy savings associated with the full staff complement of 33.9 FTEs.

The Ministry of Health FTE utilization for the Saskatchewan Disease Control Laboratory was at the full level of 17.5 FTE's during the reporting period. In addition to the FTEs within the Ministry of Health, funding is provided to Regional Health Authorities for water related programs and surveillance. It is not possible to state the actual number of Regional Health Authority FTEs that are dedicated to water as a number of different disciplines (i.e. Medical Health Officers, Public Health Inspectors and Public Health Nurses) can become involved in water and or water related disease surveillance, and issue-specific time is not tracked.

Under the Canada-Saskatchewan Municipal Rural Infrastructure Fund (MRIF), Canada-Saskatchewan Building Canada Fund - Communities Component (BCF-CC), Provincial Territorial Base Fund (PTBase), Infrastructure Stimulus Fund (ISF) and Saskatchewan Infrastructure Growth Initiative (SIGI), the Ministry of Municipal Affairs provides financial support to municipalities for priority drinking water and wastewater infrastructure improvements. In 2011-12, $3.697 million in federal-provincial funding was paid out under the MRIF; $30.411 million in federal-provincial funding was paid out under BCF-CC; $6.296 million in federal-provincial funding was paid out under PT Base; $7.480 million in federal-provincial funding was paid out under ISF; and $2.970 million in provincial funding was paid out under SIGI for water and wastewater projects.

Expenditures

The following table outlines information on the budgeted and actual expenditures based on original 2011-12, and revised estimates relating to water management. Funding for water management activities comes from various government ministries and agencies and is contained in their respective budgets. Explanations have been provided for all variances greater than $5,000.

Ministry or Agency	Estimates Budget ($000s)	Actual Expenditure ($000s)	Variance Over (Under) ($000s)
Ministry of Environment – Total	3,510	3,427	(83)[1]
Saskatchewan Watershed Authority - Total	4,414	38,274*	33,860[2]
Ministry of Municipal Affairs **			
- BCF-CC	38,667	30,411	(8,256)
- BCF-MIC	0	0	0
- ISF	10,643	7,480	(3,163)
- MRIF	2,629	3,697	1,068
- PT Base	5,123	6,296	1,173
- SIGI	3,183	2,970	(213)
Ministry of Municipal Affairs - Total	60,245	50,854	(9,391)[3]
Ministry of Health			
Regional Health Services			
- Regional Health Authorities (Health Regions) Base Operating Funding	476***[4]	476	0
- Regional Targeted Programs and Services	30	0	(30)[5]
- Regional Programs Support	0[4]	0	0
Saskatchewan Disease Control Laboratory – Environmental Services	1074	916	(158)[6]
Ministry of Health - Total	1,580	1,392	(188)
Total	69,749	93,947	24,198

* Expenditures shown are grants from the General Revenue Fund to the Saskatchewan Watershed Authority for these programs. The Authority received supplementary estimates of $33.860M for flood relief in 2011-12.
** The Ministry of Municipal Affairs budget is determined by program, not by infrastructure category (e.g. water and wastewater). The budget estimate is based on a ratio of the water and wastewater expenses compared to total program expenses multiplied by the total program budget for 2011-12.
*** This amount does not include additional funding provided to Health Regions to offset increases to salaries and benefits through collective bargaining agreements.

****As SaskWater is a Crown Investments Corporation subsidiary, its financial budgeting process, including timing and approvals, is separate from that of the Ministries and/or Agencies. Its activities are not related to water management, but rather the provision of water services to its customers. For full financial information, see SaskWater's annual report:
http://www.saskwater.com/MediaCentre/Documents/2011AnnualReportTheClearChoice.pdf

Explanations of Major Variances

[1] The under expenditure is the result of vacancy savings during the fiscal year.

[2] The Ministry of Environment received supplementary estimates of $33.860M for flood relief in 2011-12.

[3] In 2011-12, Saskatchewan had extreme weather which caused construction delays in various areas of the province especially in smaller or remote communities. Contractors could not work on the projects, or were delayed at other projects due to the weather. Delays were also caused by lack of engineering capacity and lack of construction firms available to complete the work. These under expenditures are partially offset by over expenditures under MRIF and PT Base.

[4] $20,000 was transferred from Regional Programs Support to Regional Health Authorities' base operating funding (Mamawetan Churchill River Regional Health Authority) to address costs associated with inspection of remote health regulated water supplies in the far north.

[5] $30,000 under-expenditure in Regional Targeted Program due to deferred projects.

[6] $158,000 under-expenditure for the Saskatchewan Disease Control Laboratory is mainly due to efficiencies in lab testing equipment.

Revenues

There are no revenues that arise specifically in relation to delivery of drinking water activities for the ministries of Environment, Municipal Affairs and Agriculture. Any revenues that arise from government commitments and activities relating to drinking water and source water protection within the Ministry of Health, SaskWater or the Saskatchewan Watershed Authority are reported within their respective annual reports.

For More Information

For an electronic copy of this report or more information on the status of drinking water in Saskatchewan visit:
www.SaskH20.ca/news.asp or
www.SaskH2O.ca/WaterInformationFactSheet_Drinking_AnnualReports.asp

Or contact:

Municipal Branch
Environmental Protection and Audit Division
Saskatchewan Ministry of Environment
3211 Albert Street
REGINA, SK S4S 5W6
Telephone: (306) 787-6504
Toll free: 1-800-567-4224

Feedback on the key actions and results may also be provided to the Ministry of Environment through the contact information immediately above.

Next year's annual report will address the status of drinking water for the 2012-13 fiscal year.

Appendix A: List of Acronyms Contained in this Document

ABC	Association of Boards of Certification
ADD	Provincial Council of Agriculture Development and Diversification (ADD) Boards
ATAP	Advanced Technologies Applications
BCF-CC	Canada-Saskatchewan Building Canada Fund - Communities Component
BCF-MC	Canada-Saskatchewan Building Canada Fund – Major Infrastructure Component
BMP	Beneficial Management Practices
CAC	Certification Advisory Committee
CCME	Canadian Council of Ministers of the Environment
CES	Consulting Engineers of Saskatchewan
CESI	Canadian Environmental Sustainability Indicator
CEU	Continuing Education Units
COM	Certified Operations and Maintenance
CSIP	Canada-Saskatchewan Infrastructure Program
DWQI	Drinking Water Quality Index
EBWO	Emergency Boil Water Order
EFP	Environmental Farm Plans
EMS	Environmental Management System
EPO	Environmental Project Officer
FSIN	Federation of Saskatchewan Indian Nations
FTE	Full Time Equivalent
GUDI	Groundwater Under Direct Influence
INAC	Indian and Northern Affairs Canada
ISF	Infrastructure Stimulus Fund
LCD	Litres per Capita per Day
MCPA	2-Methyl-4-Chlorophenoxy Acetic Acid
MRIF	Canada-Saskatchewan Municipal Rural Infrastructure Fund
MWWE	Canada-wide Strategy for Municipal Waste Water Effluent
NTU	Nephelometric Turbidity Units
OCB	Operator Certification Board
OCP	Official Community Plans
PCAB	Provincial Council of Agriculture Development and Diversification (ADD) Boards
PCAP	Prairie Conservation Action Plan
PDWA	Precautionary Drinking Water Advisory
PPWB	Prairie Provinces Water Board
PT Base	Provincial Territorial Base Fund
RHA	Regional Health Authority
RWQP	Rural Water Quality Program
SARM	Saskatchewan Association of Rural Municipalities
SARWP	Saskatchewan Association of Rural Water Pipelines
SCADA	Supervisory Control and Data Acquisition
SCWMC	Spirit Creek Watershed Monitoring Committee
SIAST	Saskatchewan Institute of Applied Science and Technology
SIGI	Saskatchewan Infrastructure Growth Initiative
SPI	The Statement of Provincial Interest Regulation
SUMA	Saskatchewan Urban Municipalities Association
SWWA	Saskatchewan Water and Wastewater Association
WEBs	Watershed Evaluation of Beneficial Management Practices sites
WQI	Water Quality Index